

# Catch Basin Solids Sampling Summary Report

**Univar Portland (Yeon Ave) Site  
Portland, Oregon**

March 2016

**Prepared for:**  
Univar USA Inc.

[www.erm.com](http://www.erm.com)



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Summary Report  
*Univar Portland (Yeon Ave) Site*  
*Portland, Oregon*

March 2016

Project No. 0328163



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## **TABLE OF CONTENTS**

<b>1.0</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>1.1</b>	<b>OBJECTIVE OF SAMPLING</b>	<b>1</b>
<b>2.0</b>	<b>PROPERTY INFORMATION</b>	<b>4</b>
<b>2.1</b>	<b>PROPERTY LOCATION AND BACKGROUND</b>	<b>4</b>
<b>2.2</b>	<b>UNIVAR OPERATIONS</b>	
<b>2.3</b>	<b>REGULATORY SUMMARY</b>	<b>4</b>
2.3.1	<i>RCRA Cleanup Activities</i>	5
2.3.2	<i>Interim Corrective Measures</i>	5
2.3.3	<i>Historical Stormwater Discharge Monitoring</i>	6
2.3.4	<i>Stormwater Line Inspections</i>	6
2.3.5	<i>East Drive Re-Paving Soil Sampling</i>	7
2.3.6	<i>Stormwater Pathway Investigation</i>	7
<b>2.4</b>	<b>CURRENT STORMWATER MANAGEMENT</b>	<b>8</b>
2.4.1	<i>Univar-Maintained Drainage System</i>	9
2.4.2	<i>COP- and ODOT-Owned Stormwater Lines</i>	10
<b>3.0</b>	<b>CATCH BASIN SOLIDS SAMPLING PROCEDURES</b>	<b>13</b>
<b>3.1</b>	<b>SAMPLING LOCATIONS</b>	<b>13</b>
3.1.1	<i>Field Sampling Methodology</i>	13
3.1.2	<i>Field Quality Control Samples</i>	14
3.1.3	<i>Laboratory Analytical Methods</i>	14
<b>4.0</b>	<b>CATCH BASIN SOLIDS SAMPLING RESULTS</b>	<b>16</b>
<b>4.1</b>	<b>CATCH BASIN SOLIDS ANALYTICAL RESULTS</b>	<b>16</b>
4.1.1	<i>Metals</i>	17
4.1.2	<i>Polychlorinated Biphenyls</i>	17
4.1.3	<i>Organochlorine Pesticides</i>	17
4.1.4	<i>Volatile Organic Compounds</i>	17
4.1.5	<i>Phthalate Esters</i>	17
4.1.6	<i>Polycyclic Aromatic Hydrocarbons</i>	17

**5.0 CONCLUSIONS** 18

**6.0 REFERENCES** 19

## ***LIST OF APPENDICES***

- APPENDIX A      CATCH BASIN SAMPLING FIELD NOTES*
- APPENDIX B      CATCH BASIN SAMPLING PHOTO LOG*
- APPENDIX C      LABORATORY ANALYTICAL REPORT AND DATA VALIDATION  
MEMO*
- APPENDIX D      ODEQ PORTLAND HARBOR INDUSTRIAL STORMWATER CHARTS*

***LIST OF FIGURES (Figures immediately follow the text)***

- 1      *Property Location Map*
- 2      *Property Vicinity Map*
- 3      *Property Layout and Utility Map*
- 4      *Metals Concentrations in Catch Basin Solids*
- 5      *Total PCB Concentrations in Catch Basin Solids*
- 6      *Organochlorine Pesticide Concentrations in Catch Basin Solids*
- 7      *BEHP Concentrations in Catch Basin Solids*
- 8      *Total PAH Concentrations in Catch Basin Solids*

***LIST OF TABLES (Tables immediately follow the Figures)***

- 1      *Summary of Drainage Basins*
- 2      *Stormwater Line Inspection Summary*
- 3      *Catch Basin Solids Analytical Results*

***LIST OF ACRONYMS***

AOC	Agreed Order on Consent
BEHP	bis(2-ethylhexyl)phthalate
BMP	best management practices
CB	catch basin
CMS	Corrective Measures Study
COC	chemical of concern
COI	contaminants of interest
COP	City of Portland
DCE	1,2-dichloroethene
DDT	dichlorodiphenyltrichloroethane
DOT	Department of Transportation
ECSI	Environmental Cleanup Site Information
ERM	ERM-West, Inc.
IBC	intermediate bulk containers
ICM	interim corrective measures
JSCS	Joint Source Control Strategy
MC	methylene chloride
NPDES	National Pollutant Discharge Elimination System

ODEQ	Oregon Department of Environmental Quality
ODOT	Oregon Department of Transportation
OF 18	Outfall 18
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
pH	hydrogen ion concentration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SCSE	source control screening evaluation
SVOC	semi-volatile organic compound
SLV	Screening Level Value
SPI Report	Stormwater Pathway Investigation Report
SPCC	Spill Prevention Control and Countermeasure
SVE	soil vapor extraction
SWPCP	Stormwater Pollution Control Plan
TCA	1,1,2-trichloroethane
TCE	trichloroethene
TestAmerica	TestAmerica Laboratories
TPH	total petroleum hydrocarbons
TSS	total suspended solids
µg/kg	micrograms per kilogram

$\mu\text{g}/\text{L}$	micrograms per liter
Univar	Univar USA Inc.
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
Work Plan	Stormwater Source Control Screening Evaluation Work Plan
WTS	water treatment system

## **1.0**

### **INTRODUCTION**

ERM-West, Inc. (ERM) has prepared this report on behalf of Univar USA Inc. (Univar) to document the results of the stormwater catch basin solids sampling at the Univar Portland (Yeon Ave) site in Portland, Oregon (the "Property") (Figure 1). The stormwater catch basin solids sampling was performed in accordance with the *Final Stormwater Source Control Evaluation Work Plan* (ERM 2015) (Work Plan) as the initial phase of a stormwater source control screening evaluation (SCSE) to characterize stormwater discharges at the site. This report is being submitted in accordance with the Letter Agreement, dated 24 July 2015, between Univar and the Oregon Department of Environmental Quality (ODEQ) to investigate the stormwater pathway and implement stormwater source control measures, if needed, under ODEQ's Voluntary Cleanup Program. This work is being conducted to evaluate whether or not actual or potential sources of constituents of concern pose an environmental risk to the Portland Harbor Superfund study area of the Willamette River via potential stormwater pathway or through groundwater in or along utility conveyance features that discharge to the Willamette River.

Univar began conducting stormwater pathway investigations at the Property in 2008 pursuant to an Amendment to Administrative Order on Consent to Implement Corrective Action (Resource Conservation and Recovery Act [RCRA] Docket No. 1087-10-18-3008[h]) for the Property dated 1 August 2007 between Univar and the United States Environmental Protection Agency (USEPA). Univar submitted a *Draft Stormwater Pathway Investigation Report* ([SPI Report] PES 2012) to USEPA on 21 August 2012. ODEQ and the City of Portland (COP) Bureau of Environmental Services submitted comments on the SPI Report to the USEPA on 5 December 2012 and 27 February 2013, respectively. Comments on the SPI Report have not yet been received from the USEPA. This SCSE is being performed by Univar to proactively evaluate the stormwater pathway under ODEQ oversight in the absence of USEPA engagement at this time.

## **1.1**

### **OBJECTIVE OF SAMPLING**

To evaluate and control potential adverse impacts to the Willamette River from industrial properties throughout Portland Harbor, the ODEQ and USEPA developed and jointly administer the Portland Harbor Joint Source Control Strategy ([JSCS], ODEQ 2005). The ODEQ is requiring individual upland property owners to identify, evaluate, and control

sources of contamination that may reach the Willamette River consistent with the JSCS. The JSCS is a guidance document that represents a framework that can be utilized to identify, prioritize, and implement source control measures at upland sites within the Portland Harbor Superfund Site.

The JSCS outlines the following process for performing stormwater source control evaluations:

- **Step 1 – Develop Background Information.** This information is used to provide the framework for selecting catch basin solids and stormwater monitoring parameters for the screening evaluation. This information was presented to ODEQ in the Work Plan.
- **Step 2 – Select Sample Analyses Parameters.** This involves selecting parameters for monitoring catch basin solids and stormwater quality and locations for characterizing the stormwater pathways. This process was performed in the Work Plan, and this report presents the results of the catch basin solids sampling.
- **Step 3 – Design and Perform Catch Basin Solids Sampling.** Catch basin solids represent a time-integrated snapshot of potential solids discharged to the river. During this task, catch basins locations are selected, solids are sampled, and the samples are analyzed for the parameters selected in Step 2. The sediment sampling design was presented in the Work Plan.
- **Step 4 - Design and Perform Stormwater Sampling.** Following catch basin solids sampling, stormwater grab sampling is performed which may include a combination of “first flush” grab sampling and composite sampling throughout the duration of a storm.
- **Step 5 – Perform Screening Evaluation.** Catch basin solids and stormwater sampling results are compared against JSCS Screening Level Values (SLVs). If site concentrations exceed SLVs, and readily available best management practices (BMPs) are not effective at reducing concentrations below the SLVs, a qualitative or quantitative weight-of-evidence evaluation is performed to determine if more aggressive stormwater investigation and/or source control are needed.
- **Step 6 – Implement Interim Remedial Measures (if necessary).** If deemed necessary by the weight-of-evidence evaluation, remedial measures such as source removal, storm system improvements (*e.g.*, line cleaning, catch basin replacement), or stormwater treatment may be implemented.

This report is designed to present the results of Step 3 described above. The results of the catch basin solids sampling will be used to perform Steps 4, 5, and 6.

## **2.0**

### ***PROPERTY INFORMATION***

This section presents a summary of the site background and operations information. Additional site background information, including the site regulatory summary and the current stormwater management, was presented in the Work Plan.

## **2.1**

### ***PROPERTY LOCATION AND BACKGROUND***

The Property is located at 3950 NW Yeon Avenue, Portland, Oregon. The Property is in a heavily industrialized area northwest of downtown Portland, approximately 0.5 miles south of the Willamette River and 0.25 miles north of the Tualatin Mountains. The Property vicinity is shown on Figure 2. Univar is a wholesale distributor of bulk and pre-packaged chemical products. The Property is an active distribution facility and has operated as such since approximately 1947. The Property layout has remained largely unchanged over the past approximately 30 years.

The Property is zoned “heavy industrial.” Nearby properties include American Steel, McWhorter (also known as McCloskey Varnish), and the Shell (formerly Texaco) petroleum tank farm to the west; Container Recovery Inc. (formerly Convoy) and ABF/ASNR Trucking (formerly ANR) to the east and southeast; and Index Steel and Wilhelm Trucking to the south. The area has been industrialized for over 60 years.

## **2.2**

### ***UNIVAR OPERATIONS***

The Property encompasses approximately 9.8 acres, of which 9.6 acres are impervious surfaces. All of Univar’s industrial activities take place on paved or concrete surfaces. Major structural features include warehouses and office space, a railroad spur, loading docks, and aboveground storage tanks. A railroad spur runs along the west side of the warehouse and loading dock. A chain-link fence surrounds the Property with access via two security gates at the north end of the Property.

## **2.3**

### ***REGULATORY SUMMARY***

This section summarizes the Property’s regulatory history:

- RCRA cleanup-related activities conducted under Section 3008(h) of RCRA consistent with the provisions of the Agreed Order on Consent (AOC) dated 15 June 1988 that Univar entered into with USEPA Region 10 (USEPA 1988);
- RCRA cleanup-related activities conducted under Section 3008(h) of RCRA consistent with the provisions of the Amendment to the AOC to Implement Corrective Action 1087-10-18-3008 (the “Amended Order”) dated 1 August 2007 (USEPA 2007);
- Historical stormwater discharge monitoring in accordance with National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. 101613 (ODEQ 2004); and
- Stormwater line inspections.

### **2.3.1      *RCRA Cleanup Activities***

Univar reported four chemical releases at the Property between 1979 and 1985 that included trichloroethene (TCE), methylene chloride (MC), toluene, and mineral acid. In addition, several small releases of chemicals occurred at the Property during chemical handling and transfer activities.

In July 1986, the USEPA issued a Unilateral Order to Van Waters and Rogers (Univar’s predecessor in interest) to conduct an investigation of soil and groundwater at the Property in response to reported chemical releases. Van Waters & Rogers conducted this investigation in 1987 in two phases. USEPA terminated the Unilateral Order in April 1988. On 15 June 1988, Van Waters & Rogers entered into an AOC with USEPA pursuant to Section 3008(h) of RCRA to address historical chemical releases at the Property. Sampling conducted as part of RCRA Closure activities detected the presence of volatile organic compounds (VOCs) in soil and groundwater. The Property was listed in the ODEQ Environmental Cleanup Site Information (ECSI) Database (Site ID#330) in 1988.

### **2.3.2      *Interim Corrective Measures***

Univar has implemented a number of ICMs in accordance with the 1988 AOC, beginning in 1992 with a pilot-scale soil vapor extraction (SVE) system. A groundwater ICM, consisting of three groundwater extraction wells, was installed during late 2001 and early 2002. The groundwater ICM, which began operations in March 2002, provides hydraulic control of the groundwater contamination at the north and south ends of the Property and also removes contaminant mass. The system is currently extracting groundwater from two extraction wells (EXW-2 and EXW-3A) at a total rate of approximately 6.3 gallons per minute (gpm). The

extracted groundwater is treated by air stripping in the water treatment system (WTS) and discharged to the COP-owned 42-inch stormwater line via catch basin CB-4C (Figure 3) under NPDES Waste Discharge Permit No. 101613. Monthly compliance samples are collected and reported to the ODEQ in Discharge Monitoring Reports in accordance with NPDES Permit No. 101613. Stormwater discharges from the Property were also regulated under this same permit until 2010.

Monthly compliance monitoring samples that are collected from the WTS discharge are analyzed for VOCs, cyanide, oil and grease, and pH in accordance with NPDES Waste Discharge Permit No. 101613. Additional characterization samples collected between October 2010 and October 2013 evaluated total arsenic, dissolved arsenic, total iron, dissolved iron, total manganese, and dissolved manganese in the WTS discharge.

### 2.3.3

#### *Historical Stormwater Discharge Monitoring*

Univar discharged stormwater in accordance with NPDES Waste Discharge Permit No. 101613 until such requirements ended in 2010. Pursuant to the NPDES Waste Discharge Permit, Univar implemented stormwater pollution control measures and conducted routine stormwater sampling documented in the former Stormwater Pollution Control Plan ([SWPCP], PES 2008).

Univar's NPDES Permit No. 101613 was originally issued in 1998 and renewed in 2004 and 2010. During the permit reapplication process in 2010, ODEQ determined that stormwater runoff from the Univar Property would no longer need to be regulated under the re-issued NPDES permit based on Univar's primary Standard Industrial Classification code of 5169 (Chemicals and Allied Products), which does not require stormwater to be regulated under the NPDES General 1200Z Permit. As a result, stormwater monitoring and reporting requirements were eliminated on 20 September 2010 (ODEQ 2010). However, Univar has continued to maintain and implement a SWPCP for the Property as a BMP.

### 2.3.4

#### *Stormwater Line Inspections*

A COP-owned 42-inch stormwater line runs along the Property's eastern boundary and the boundary of the adjacent property, Container Recovery Inc. The COP's stormwater line transports stormwater runoff and other discharges from numerous upstream industrial facilities in the east-central sub-basin to the COP Drainage Basin 18, including: ABF Freight Systems, Inc.; ANRFS Holdings, LLC; Wilhelm Trucking; Carson Oil; Portland Bolt & Manufacturing; Journal Graphics; and Bushnells Warehouse (COP 2013).

## 2.3.5

### *Stormwater Pathway Investigation*

The Draft SPI Report documented Univar's investigation efforts related to the Property's stormwater and preferential pathways to the COP Basin 18 stormwater conveyance system. The SPI activities completed and described within the Draft SPI Report are summarized as follows:

- Evaluated background information for the Property, including cleanup activities and operations relevant to stormwater pathways;
- Inspected the COP-owned 42-inch stormwater line and evaluated pipe integrity and the potential for groundwater infiltration to the stormwater line;
- Conducted stormwater sampling and flow monitoring of the COP-owned 42-inch stormwater line during three sampling events at locations upgradient and downgradient of the Property;
- Performed dry weather sampling of water within the COP-owned 42-inch stormwater line to evaluate a potential groundwater infiltration pathway;
- Conducted stormwater solids sampling and installed solids traps in the COP-owned 42-inch stormwater line at locations upgradient and downgradient of the Property; and
- Evaluated and compared stormwater, stormwater solids, and dry weather flow sampling results to SLVs.

COP and ODEQ comments on the Draft SPI Report required additional investigation efforts to complete the SWSCE, including the following:

- Collecting site-specific stormwater and stormwater solids data from all areas of the Property to identify contaminants of interest (COIs) for the stormwater pathway; and
- Evaluating groundwater infiltration pathways to determine whether additional source control measures were needed to address a potential preferential groundwater pathway to the river from the Property.

While additional investigation is required to complete the SWSCE process, dry weather sampling results from the previous SPI investigation can be used as a line of evidence for evaluating the potential for groundwater infiltration to serve as a source of contaminants to the Willamette River via the COP-owned 42-inch stormwater line. The Draft SPI Report identified eight COCs exceeding SLVs in the dry weather flow sampling results: PCE, TCE, VC, chloroform, and 1,1-dichloroethane (DCA), DDT (sum of 2,4' and 4,4'), arsenic, and manganese.

As discussed in Section 2.3.4, the COP-owned 42-inch stormwater line conveys stormwater from numerous other upstream and up-pipe industrial facilities, each of which is a potential source of contamination to the river. These facilities may also contribute to contaminants observed during dry weather flows as samples were only collected in the COP-owned 42-inch stormwater line.

## 2.4

### **CURRENT STORMWATER MANAGEMENT**

The Property is located within the Outfall 18 (OF 18) drainage basin of the Lower Willamette River Basin. The OF 18 drainage basin is a 465-acre stormwater basin on the west side of the Willamette River at approximately River Mile 8.8 that discharges to OF 18. Figure 1 shows the location of OF 18 and its associated drainage basin. The COP has divided the OF 18 drainage basin into five sub-basins. The Property is located within the east-central and west-central sub-basins (Appendix B). The majority of the Property (approximately 92 percent) drains to the east-central sub-basin, which covers approximately 37.5 acres comprised of mostly industrial properties. A small portion of the Property (approximately 8 percent) drains to the west-central sub-basin, which covers approximately 129 acres comprised of industrial properties and parks and open spaces.

The Property's storm drain system and associated drainage areas are shown on Figure 3. Univar maintains the Property's stormwater drainage system with the following exceptions:

- The COP-owned, maintained, and operated 42-inch stormwater line, which is located within an easement along the Property's eastern property boundary;
- The COP-owned 15-inch stormwater line which runs west to east across the southern portion of the Property from Index Steel and ties into the COP-owned 42-inch stormwater line at manhole AAX252; and
- The 8-inch stormwater line of unknown ownership which runs southwest to northwest from Index Steel and ties into the Drainage Basin 1 discharge at manhole STM-1.

The Univar-maintained stormwater drainage system includes roof drains, catch basins, stormwater conveyance piping, manholes, and emergency shut-off valves.

## 2.4.1

### *Univar-Maintained Drainage System*

Stormwater runoff within the Property is collected by a series of catch basins and roof drains located throughout the Property. The catch basins route water through underground stormwater conveyance lines and manholes to COP-owned stormwater lines.

Figure 3 shows the Property's drainage basins, storm drain infrastructure and other pertinent Property features. A summary of drainage basin characteristics is provided in Table 1. The majority of collected runoff on the Property is discharged to a COP-owned 42-inch stormwater line that runs parallel and near the east property boundary. A small amount of runoff (from Drainage Basin No. 5) discharges to a COP-owned 42-inch stormwater line that services American Industries to the west. All stormwater runoff from the Property ultimately discharges nearly one-half mile away to the Willamette River.

The central and southern portions of the Property are the primary areas of industrial activity and consist mainly of chemical handling and storage operations. These areas are serviced by Drainage Basin Nos. 1, 2, 3, and 4.

- Drainage Basin No. 1 – Consists of approximately 93,848 square feet of impervious surfaces, including the southern half of the rail spur, drum fill area, and solvent tank farm area. Runoff from this basin combines with runoff from an adjacent property (Index Steel) at manhole STM-1 and discharges to the COP-owned 42-inch stormwater line through a single lateral.
- Drainage Basin No. 2 – Consists of approximately 105,253 square feet of impervious surfaces, including the eastern drive, covered drum storage structures, and the eastern half of the warehouse. Seven catch basins and four potential roof drain laterals are connected to the COP-owned 42-inch stormwater line. As discussed in Section 2.3.3, laterals to the COP-owned 42-inch stormwater line are summarized in Table 2 and shown on Figure 3. Five roof drains from the warehouse have one known active connection to the COP-owned 42-inch stormwater line. Dock drains E-5 and E-6 drain surface depressions in the covered drum storage area and occasionally collect a minimal amount of rainwater during heavy rain events. The collected water initially discharges through SPCC valves E-5 and E-6 to the paved surface, and then discharge via surface flow to catch basin CB-2G.
- Drainage Basin No. 3 - Consists of approximately 65,122 square feet of impervious surfaces in the center of the Property, including the corrosive tank farm and the central rail spur. Runoff from this basin

discharges to the COP-owned 42-inch stormwater line through a single lateral.

- Drainage Basin No. 4 – Consists of approximately 75,664 square feet of impervious surfaces at the southern end of the Property, including the ICM building. Three catch basins connect to the COP-owned 42-inch stormwater line via two laterals. One roof drain directly connects to the COP-owned 42-inch stormwater line.

The final two discharge areas drain the northern portions of the Property where little or no industrial activity occurs.

- Drainage Basin No. 5 – Consists of approximately 34,756 square feet of impervious surface due west of the warehouse that is used for truck unloading to the warehouse and employee parking. Runoff from this basin is collected in four catch basins and conveyed by a single lateral to a COP-owned 42-inch stormwater line that services the American Industries site.
- Drainage Basin No. 6 - Consists of approximately 47,527 square feet of impervious surface at the northern end of the Property that is generally used for employee vehicle parking. Runoff from this basin is collected in five catch basins and conveyed to the COP-owned 42-inch stormwater line via a single lateral.

## 2.4.2

### *COP- and ODOT-Owned Stormwater Lines*

The COP-owned 42-inch stormwater line on the eastern boundary of the Property and the 42-inch line on the American Industries site convey stormwater from the Univar Property and adjacent and nearby properties. Both of these COP-owned 42-inch stormwater lines eventually flow to the north and connect to an Oregon Department of Transportation (ODOT)-owned 48-inch stormwater line, which is located in the frontage road adjacent to NW Yeon Avenue. This 48-inch stormwater line flows to the northwest and ultimately discharges to the Willamette River via OF 18 (PES 2012).

#### 2.4.2.1

##### *COP-Owned 42-inch Stormwater Line*

The COP-owned 42-inch stormwater line that runs south-to-north courses through and past the Univar Property prior to connecting to the ODOT-owned 48-inch stormwater line that ultimately discharges to the Willamette River. Table 2 presents the results of a recent review of inspections to identify influent laterals to the City-owned 42-inch stormwater line in the vicinity of the Property. As described above, this COP-owned 42-inch stormwater line receives and transports substantial

quantities of stormwater discharged from a significant number of industrial areas upgradient, downgradient, and adjacent to the Univar Property. The Univar Property and the adjacent American Industries property are geographically located at the furthest downstream end of the COP-owned 42-inch stormwater line's industrial drainage area. The following ODEQ ESCI sites are potential sources of stormwater contamination to the COP-owned 42-inch stormwater line:

- Container Recovery, Inc.;
- Wilhelm Trucking;
- Carson Oil;
- Container Management Services;
- Columbia American Plating Co.; and
- ANRFS Holdings Inc.

An evaluation of potential sources of contaminants to stormwater from these sites was presented in the *Completion Summary for City of Portland Outfall Basin 18* (COP 2013) and the *Portland Harbor Upland Source Control Summary Report* (ODEQ 2014). A summary of these reports' conclusions is set forth below. The site summary rankings described are pending implementation of source control measures and/or BMPs. The ranking may change based on future evaluations of the effectiveness of the source control actions at each site.

The adjacent **Container Recovery, Inc.** (ESCI #4015) site was considered to be a potential source of metals, PAHs, polychlorinated biphenyls (PCBs), and phthalates. In 2013 and 2014, the site was ranked as a low priority for source control, with verification of successful implementation of BMPs.

The adjacent **Wilhelm Trucking** (ESCI #69) site was determined to be a potential source of metals, phthalates, pesticides, total petroleum hydrocarbons (TPH), PAHs, and PCBs. Stormwater from Wilhelm Trucking was ranked as a medium priority for source control, with subsequent revision to a low priority following verification of successful implementation of upgrades and BMPs in 2013 (ODEQ 2014).

The upstream **Carson Oil** (ESCI #1405) site was determined to be a potential source of metals, VOCs, PAHs, PCBs, TPH, and phthalates. This site was ranked as a low priority for source control following implementation of line cleaning and other BMPs in 2012 to 2013.

The **Container Management Services** (ESCI #4784) site was determined to be a medium priority for source control for metals, TPH, PAHs, PCBs, pesticides, and phthalates. BMPs were implemented in 2011; however, the site is still considered to be an uncontrolled source of these contaminants and additional source control measures are required (ODEQ 2014).

The upstream **Columbia American Plating Co.** (ESCI #29) site was determined to be a potential source of VOCs, semi-volatile organic compounds (SVOCs), PCBs, metals, cyanide, PAHs, and phthalates in stormwater. The site was ranked as a low priority for source control following verification of successful implementation of stormwater line cleanout in 2009 and BMPs in 2011.

**ANRFS Holdings Inc.** (ESCI #1820) was determined to not be a source of contaminants to stormwater.

#### 2.4.2.1 *COP-Owned 42-inch Stormwater Line (American Industries Property)*

The COP-owned 42-inch stormwater line collects water from Drainage Area 5 in the northwestern portion of the Property (approximately 0.8 acres) along with a portion of the American Industries property located west of the Property. The COP-owned 42-inch stormwater line conveys stormwater off site to the west-central sub-basin of OF 18.

### **3.0**

### **CATCH BASIN SOLIDS SAMPLING PROCEDURES**

This section describes the sample locations, sample analytical parameters, and activities completed during this catch basin solids sampling event. The catch basin solids sampling was conducted in accordance with the procedures detailed in the Work Plan.

#### **3.1**

#### **SAMPLING LOCATIONS**

On 15 December 2015 ERM sampled six catch basins (CB-1G, CB-2E, CB-3CD, CB-4A, CB-5A, and CB-6A) and one trench drain (Trench-1) at the Property.

##### **3.1.1**

##### ***Field Sampling Methodology***

Sample collection methods were followed in general accordance with the Work Plan (ERM 2015).

All solids samples were collected using a stainless steel spoon attached to an adjustable extension pole and a stainless steel mixing bowl.

Field equipment was decontaminated prior to collecting each sample. Decontamination steps included:

- Mass removal of solids with tap water;
- Scrub with Alconox™ detergent and distilled water; and
- Rinse with distilled water.

Plastic sheeting was placed underneath all field equipment in order to maintain equipment cleanliness. The stainless steel spoon was slowly lowered with the extension pole into the catch basin or trench drain. The solids were then slowly retrieved and placed into a clean, stainless steel bowl. Subsamples were composited directly in the mixing bowl using decontaminated stainless steel spoons.

Solids samples were composited after enough material was collected using the following method:

- All large leaf matter, sticks and other debris were removed from the sample.

- If water was removed from the base of the catch basin with the sediment, the sediment was allowed to settle to the bottom of the bowl for approximately five minutes to permit the water to clear. The resulting supernatant water was then decanted into a temporary storage container.
- The sediment sample was then mixed thoroughly using a decontaminated stainless steel spoon.
- The sample was then placed into laboratory-provided glassware, labeled, and stored in cooler containing ice.
- Sampling equipment was then decontaminated, as described above.

The thickness of the solids varied at each sample location. Multiple subsamples were collected from catch basins CB-3C and CB-3D and composited to obtain sufficient sample volume for laboratory analysis.

Field sampling notes are provided in Appendix A and a photo log is included as Appendix B.

### **3.1.2 *Field Quality Control Samples***

Quality control samples were collected as described in the Work Plan (ERM 2015). The following quality control samples were collected as part of the catch basin solids sampling event:

- Following decontamination, an equipment rinsate blank was collected from the stainless steel sampling spoon following collection of the solids sample at catch basin CB-5A.
- A matrix spike/matrix spike duplicate was collected from catch basin CB-5A.

### **3.1.3 *Laboratory Analytical Methods***

All samples were collected in laboratory-provided sample containers, labeled, and stored on ice immediately after each sample was collected. The samples were delivered to TestAmerica Laboratories (TestAmerica) in Beaverton, Oregon under proper chain-of-custody procedures. TestAmerica performed the following analyses for each sediment sample:

- Metals by USEPA Method 6020A;
- Mercury by USEPA Method 7471A;
- PCBs by USEPA Method 8082A;
- VOCs by USEPA Method 8260C;

- PAHs and phthalates by USEPA Method 8270D; and
- Organochlorine Pesticides by USEPA Method 8081A.

A copy of the chain-of-custody form is provided in Appendix C.

## **4.0**

## **CATCH BASIN SOLIDS SAMPLING RESULTS**

This section presents the results of the catch basin sampling and analysis. ERM collected solids samples from six catch basins and one trench drain on 15 December 2015. Analytical results are presented in Table 3. The laboratory analytical report and data validation memorandum are presented in Appendix C.

### **4.1**

### **CATCH BASIN SOLIDS ANALYTICAL RESULTS**

The analytical results for the catch basin solids sampling and comparison to the JSCS SLVs and background levels in soil in the Portland Basin (ODEQ 2013) are presented in Table 3, shown on Figures 4 through 8, and discussed below.

It should be noted that an exceedance of an SLV does not necessarily indicate that the upland source poses an unacceptable risk to human health or the environment; rather, the SLV is a benchmark for assessing through a weight-of-evidence evaluation whether further source control measures may be required.

SLVs are guidance values derived for comparison of in-water sediment samples (*i.e.*, sediment in which ecological receptors are present) (MacDonald Probable Effects Concentration and ODEQ 2007 Bioaccumulative Sediment); they are not intended to evaluate stormwater solids samples. Therefore, comparison of catch basin solids to these in-water ecological risk guidance values is considered extremely conservative. This also means that the presence of a constituent in stormwater solids does not necessarily indicate that the constituent is migrating through stormwater runoff, nor that it is present in river sediment. If migration does occur, dilution of several orders of magnitude would be expected before accumulating in sediment.

The ODEQ has published select contaminant concentration data from stormwater solids samples collected at Portland Harbor-area industrial sites in the *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (ODEQ, 2010 updated 2015) that are presented in the form of a series of charts of ranked results, referred to in this report as the “ODEQ Portland Harbor Industrial Stormwater Charts.” These charts are intended to be used as a screening tool to distinguish “typical” industrial stormwater from stormwater containing potentially “elevated” contaminant concentrations. Concentrations within the lower/flatter portion of the

curves suggest stormwater is not being unusually impacted by contaminants at the site and is considered “typical” of industrial stormwater at Portland Harbor sites. Concentrations within the upper/steeper portion of the curves suggest that additional evaluation and source control measures may be warranted. The current catch basin solids sampling results for the site were plotted on the ODEQ Portland Harbor Industrial Stormwater Charts for comparison purposes and are included in Appendix D.

#### **4.1.1**

##### *Metals*

The metals analyzed (arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, and zinc) were detected in CB-1G, CB-2E, CB-3CD, CB-4A, CB-5A, CB-6A and Trench-1.

#### **4.1.2**

##### *Polychlorinated Biphenyls*

Aroclor 1268 was the only PCB detected at the site in three of the seven total sample locations.

#### **4.1.3**

##### *Organochlorine Pesticides*

The organochlorine pesticides analyzed were detected in one or more of the seven sample locations with the exception of toxaphene which was not detected in the samples.

#### **4.1.4**

##### *Volatile Organic Compounds*

Volatile organic compounds analyzed were detected in the seven sample locations with the exception of 1,1,1-trichloroethane, benzene, chloroform, and methylene chloride (Table 3).

#### **4.1.5**

##### *Phthalate Esters*

Detected phthalates include bis(2-ethylhexyl)phthalate (BEHP), butylbenzylphthalate, dibutyl phthalate, dimethyl phthalate, and di-n-octyl phthalate.

#### **4.1.6**

##### *Polycyclic Aromatic Hydrocarbons*

PAHs were detected in solids collected from each of the seven sample locations.

The following compounds have been identified in the catch basin solids screening evaluation as constituents of potential concern, based on current and historical site activities, their presence in catch basin solids, current detection limits, and a comparison of sampling results to the JSCS SLVs:

- Metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc);
- PCB Aroclors;
- Organochlorine pesticides;
- Phthalate esters; and
- PAHs

As constituents of potential concern, these compounds warrant further consideration as part of the stormwater screening source control screening evaluation and will be included in the stormwater sampling program. There are no proposed changes to the potential COIs for stormwater sampling and per the Work Plan the analyte list includes the following:

- Metals by USEPA Method 6020\_LL;
- Mercury by USEPA Method 7041A;
- PCBs by USEPA Method 8082A;
- VOCs by USEPA Method 8260C Low Level;
- PAHs and phthalates by EPA Method 8270D or 8270D SIM;
- Organochlorine Pesticides by USEPA Method 8081A Low Level;
- Total Suspended Solids by USEPA Method 2540D; and
- pH by USEPA Method 9040.

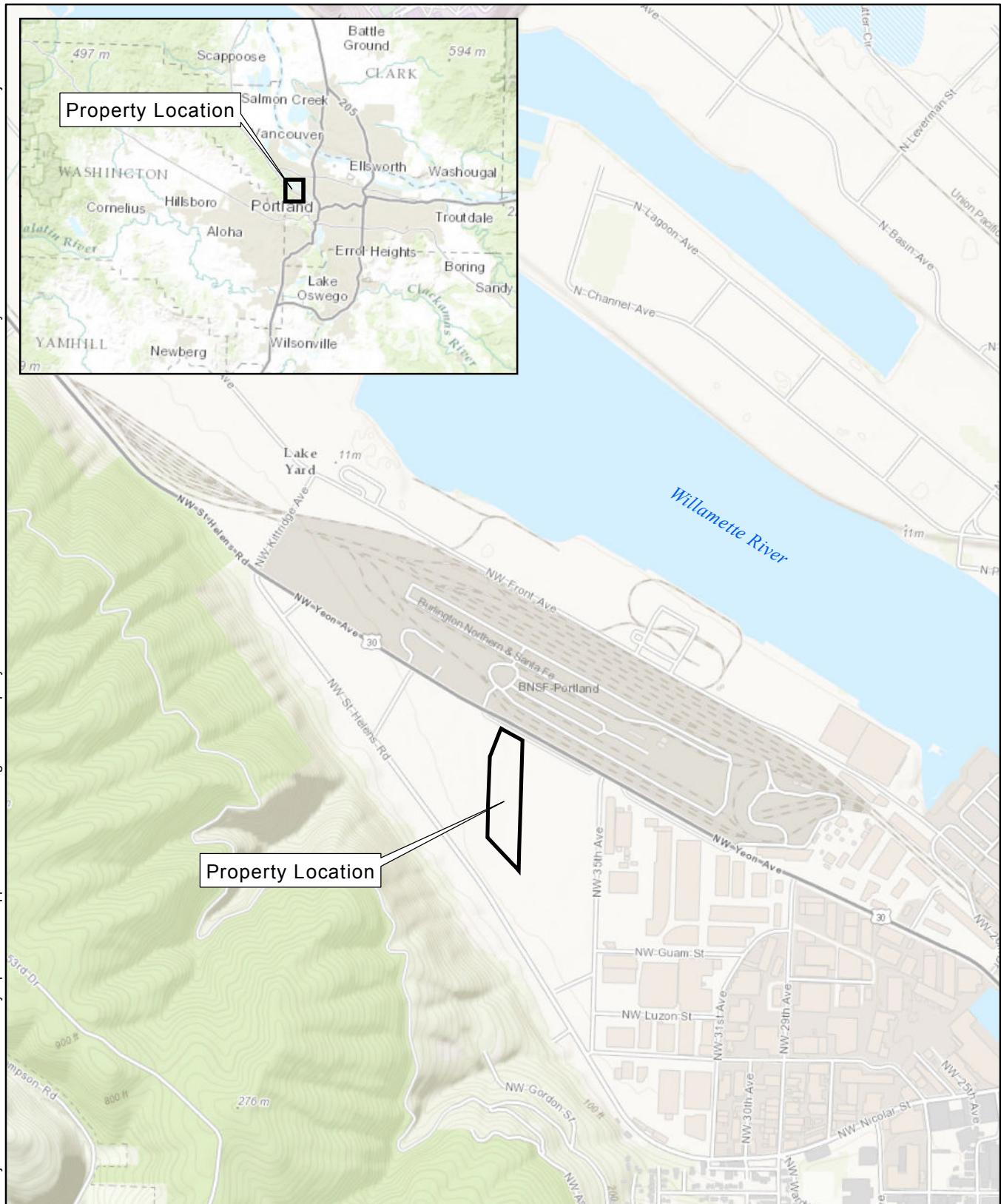
## 6.0

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*3950 NW Yeon Avenue, Portland, Oregon.* August 21.

## *Figures*



### Legend

Approximate Univar Property Boundary

0 750 1,500 3,000  
Feet



**Figure 1**  
**Property Location Map**  
**Univar USA Inc., NW Yeon Ave**  
**Portland, Oregon**



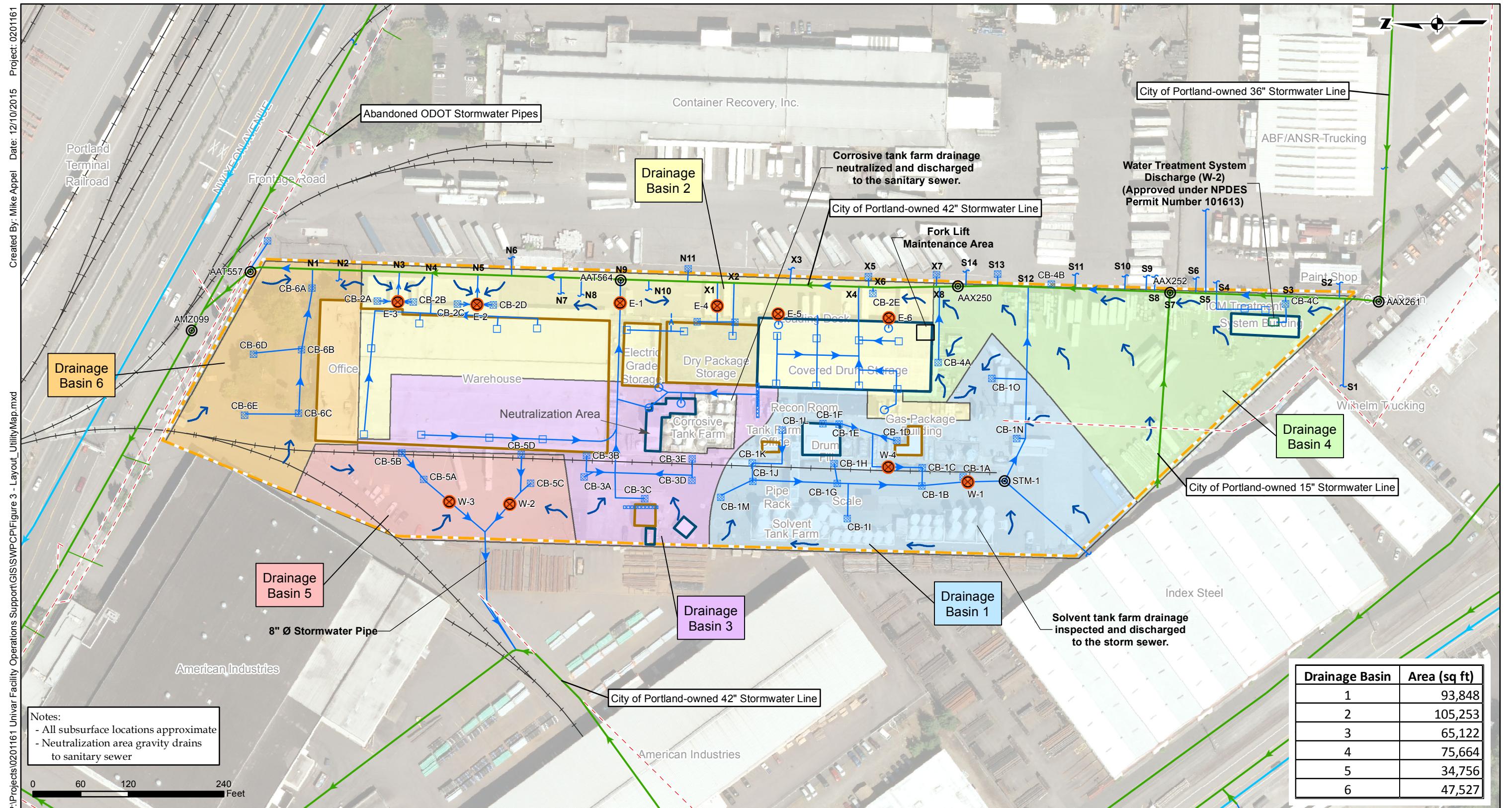
### Legend

- █ City of Portland Easement
- █ Quit Claimed Public Easement
- █ Approximate Univar Property Boundary
- +— Railroad Track



Aerial Image - USGS State Orthoimagery, July 2010, 0.5 ft per pixel.

**Figure 2**  
 Property Vicinity Map  
 Univar USA Inc., NW Yeon Ave  
 Portland, Oregon

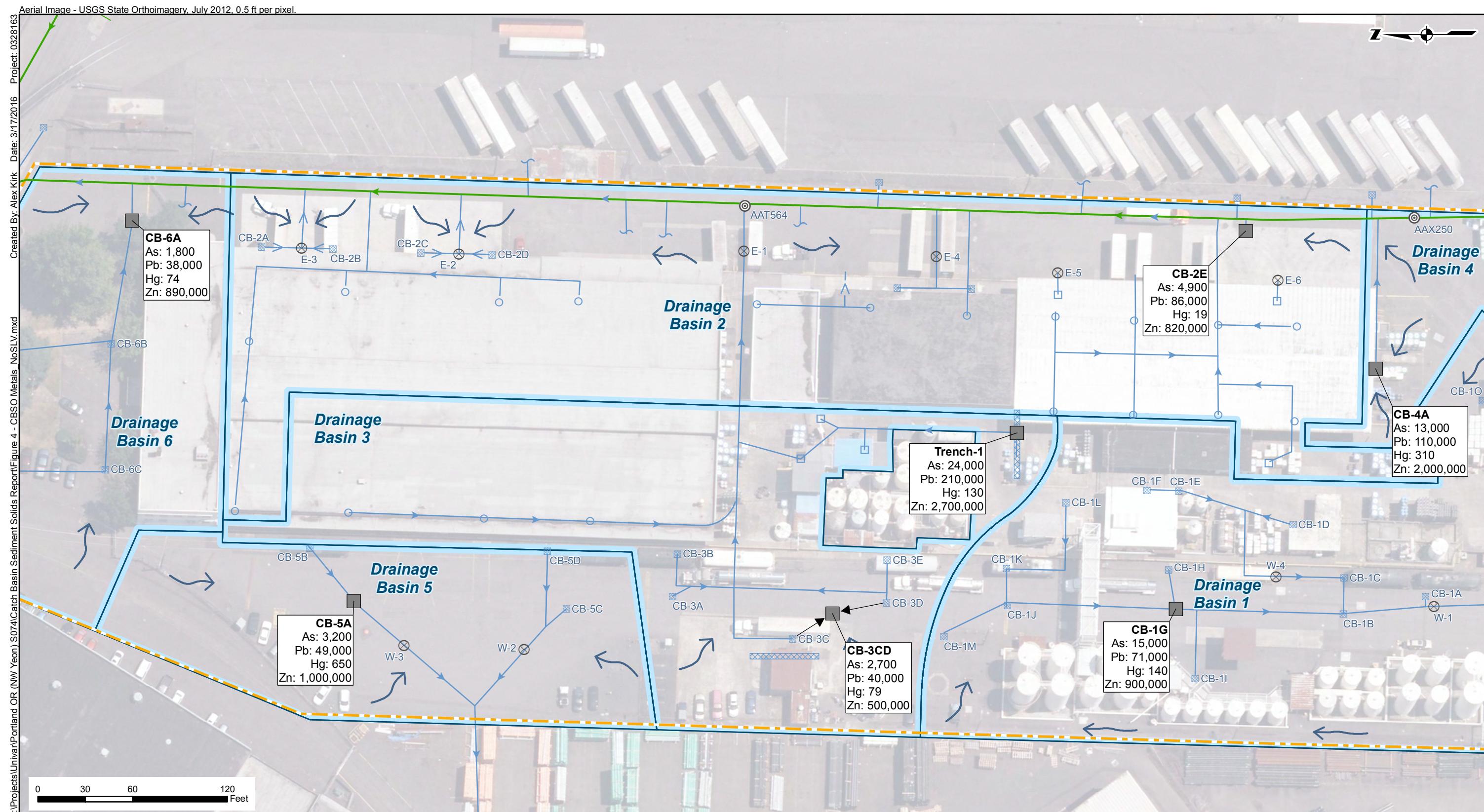

**Legend**

- Catch Basin
- Railroad Track
- Floor Drain
- Roof Drain
- ✖ SPCC Control Valve
- ◎ Storm Manhole
- + Approximate Univar Property Boundary
- Drainage Basin 1
- Drainage Basin 2
- Drainage Basin 3
- Drainage Basin 4
- Drainage Basin 5
- Drainage Basin 6

- Corrugated Metal Roof
- Tar or Asphalt Shingle Roof
- City Storm Laterals
- City Sanitary Sewer Pipes
- Private Stormwater Pipe
- City Stormwater Pipe

- Dashed Red Line: Abandoned Sewer Pipes
- Generalized Surface Flow Direction

**Figure 3**  
**Property Layout and Utility Map**  
**Univar USA Inc., NW Yeon Ave**  
**Portland, Oregon**



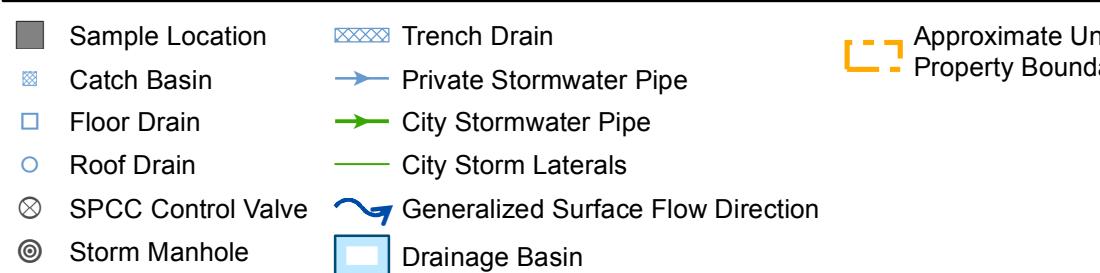
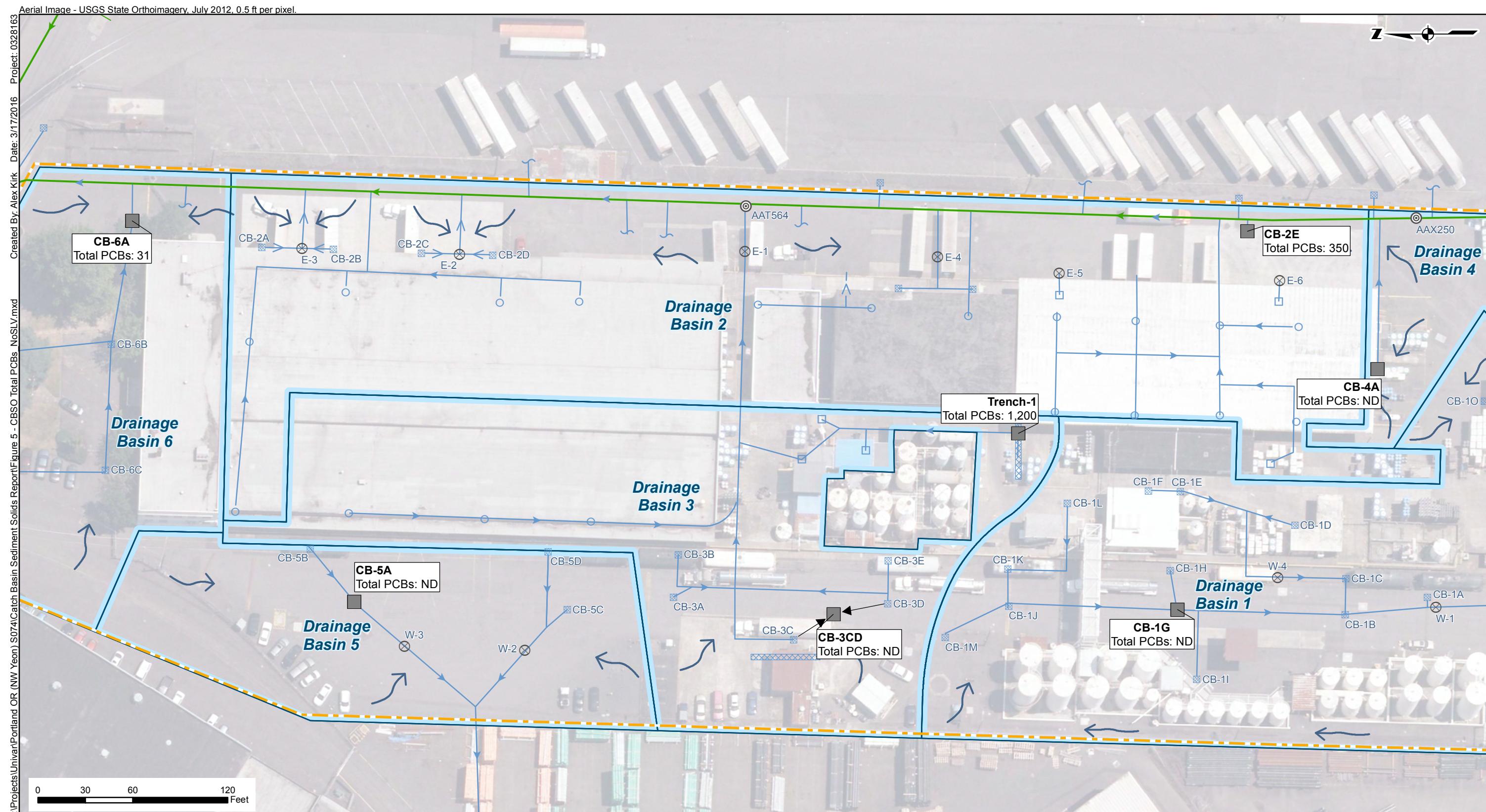
Notes:

- All results given in micrograms per kilogram ( $\mu\text{g}/\text{kg}$ )
- ND = non-detected value
- As: Arsenic
- Pb: Lead
- Hg: Mercury
- Zn: Zinc
- Samples taken on December 15, 2015
- Sample CB-3CD is a composite of samples taken from CB-3C and CB-3D
- All subsurface locations are approximate

**Figure 4**

- Sample Location
- ▣ Catch Basin
- Floor Drain
- Roof Drain
- ⊗ SPCC Control Valve
- ◎ Storm Manhole
- ☒ Trench Drain
- Private Stormwater Pipe
- City Stormwater Pipe
- City Storm Laterals
- ↗ Generalized Surface Flow Direction
- Drainage Basin

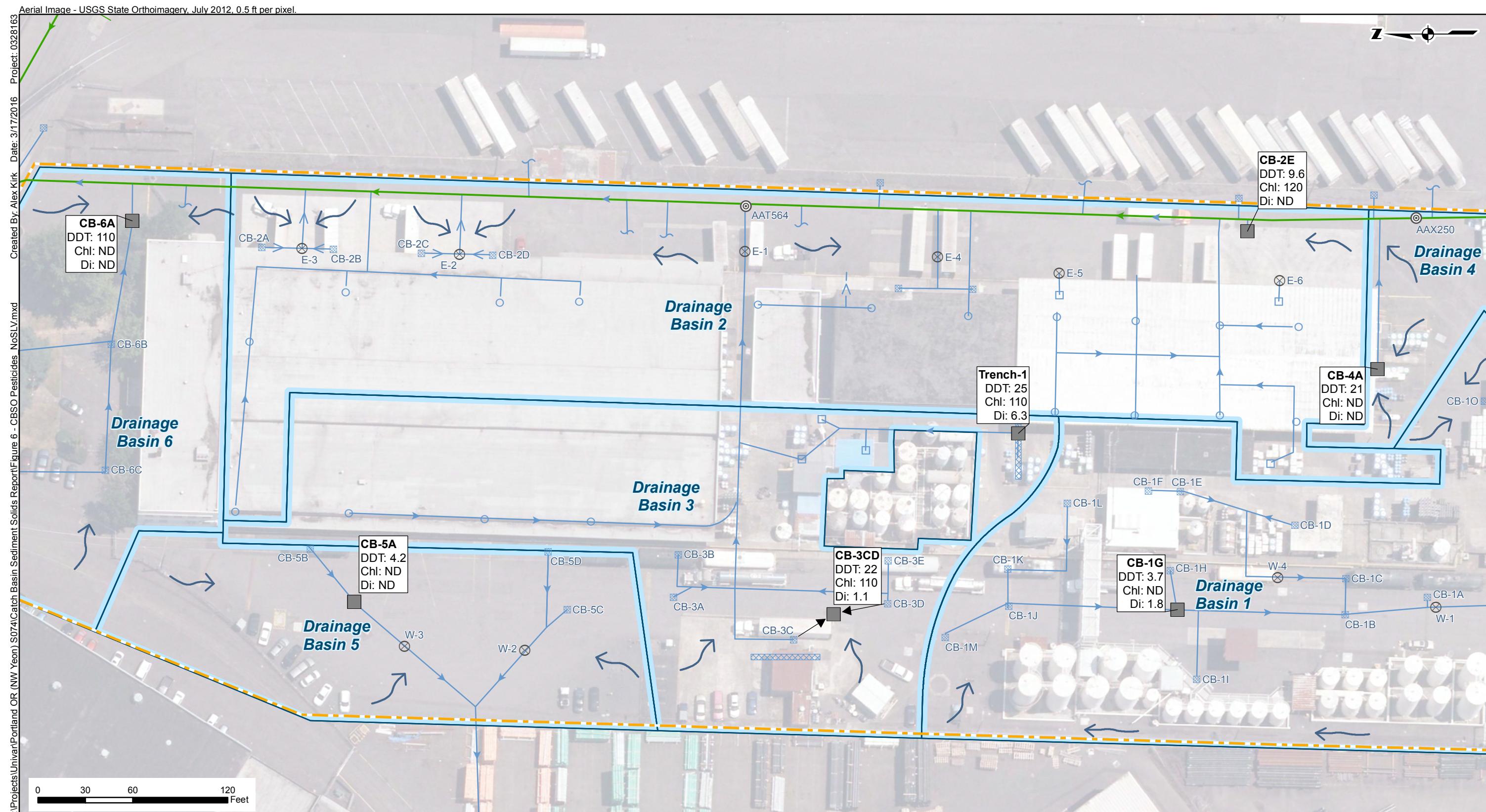
 Approximate UnProperty Boundary



Notes:

- All results given in micrograms per kilogram ( $\mu\text{g}/\text{kg}$ )
- ND = non-detected value
- Total PCBs: Total polychlorinated biphenyls
- Samples taken on December 15, 2015
- Sample CB-3CD is a composite of samples taken from CB-3C and CB-3D
- All subsurface locations are approximate

**Figure 5**  
**Total PCB Concentrations in Catch Basin Solids**  
**Catch Basin Solids Sampling Summary Report**  
**Univar USA Inc., NW Yeon Ave**  
**Portland, Oregon**



Sample Location

Catch Basin

Floor Drain

Roof Drain

SPCC Control Valve

Storm Manhole

Trench Drain

Private Stormwater Pipe

City Stormwater Pipe

City Storm Laterals

Approximate Univar Property Boundary

Generalized Surface Flow Direction

Drainage Basin

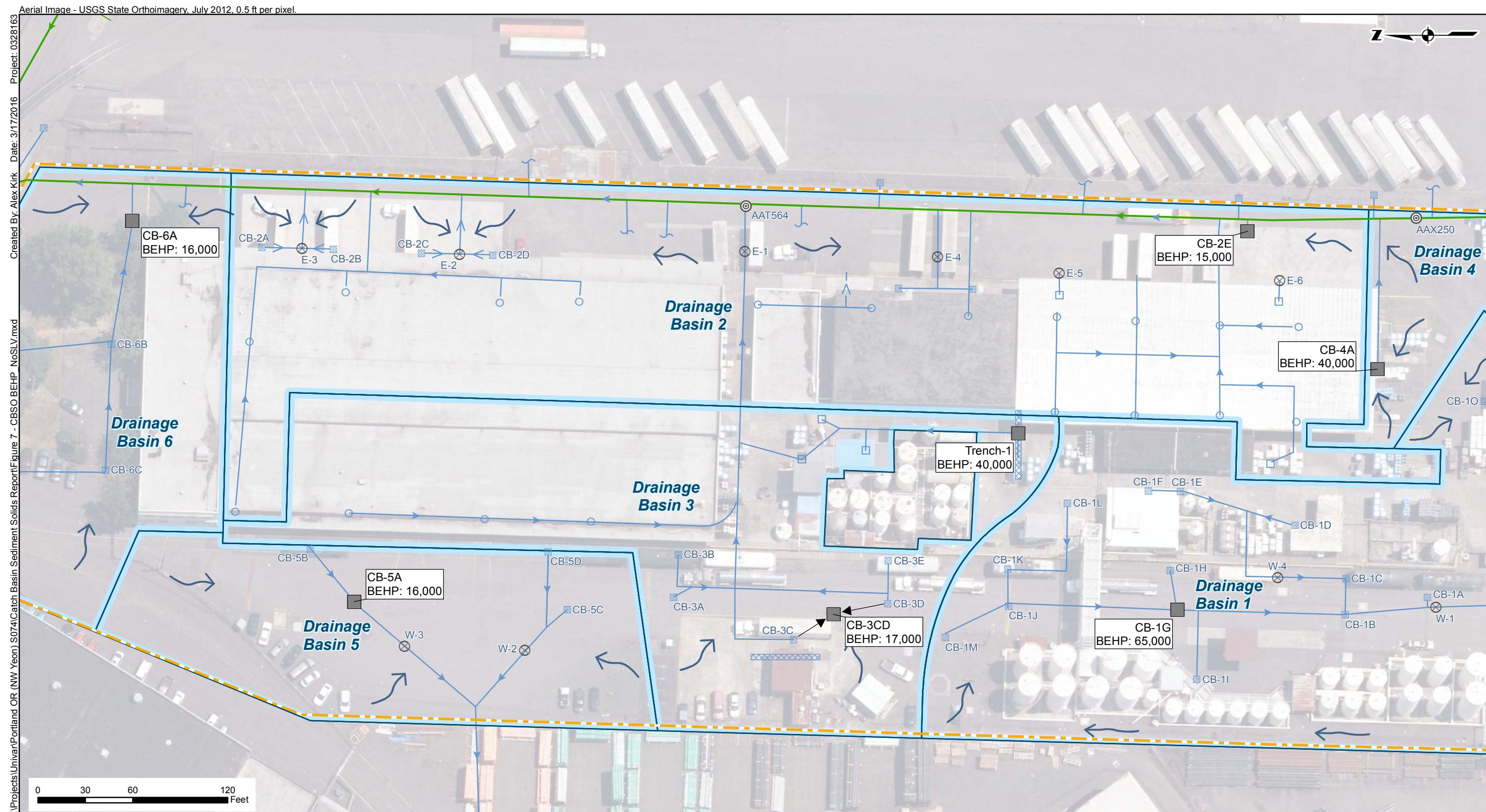
Drainage Basin

#### Notes:

- All results given in micrograms per kilogram ( $\mu\text{g}/\text{kg}$ )
- ND = non-detected value
- DDT: 4'4'DDT
- Chl: Chlordanes
- Di: Dieldrin
- Samples taken on December 15, 2015
- Sample CB-3CD is a composite of samples taken from CB-3C and CB-3D
- All subsurface locations are approximate

**Organochlorine Pesticide Concentrations in Catch Basin Solids  
Catch Basin Solids Sampling Summary Report  
Univar USA Inc., NW Yeon Ave  
Portland, Oregon**

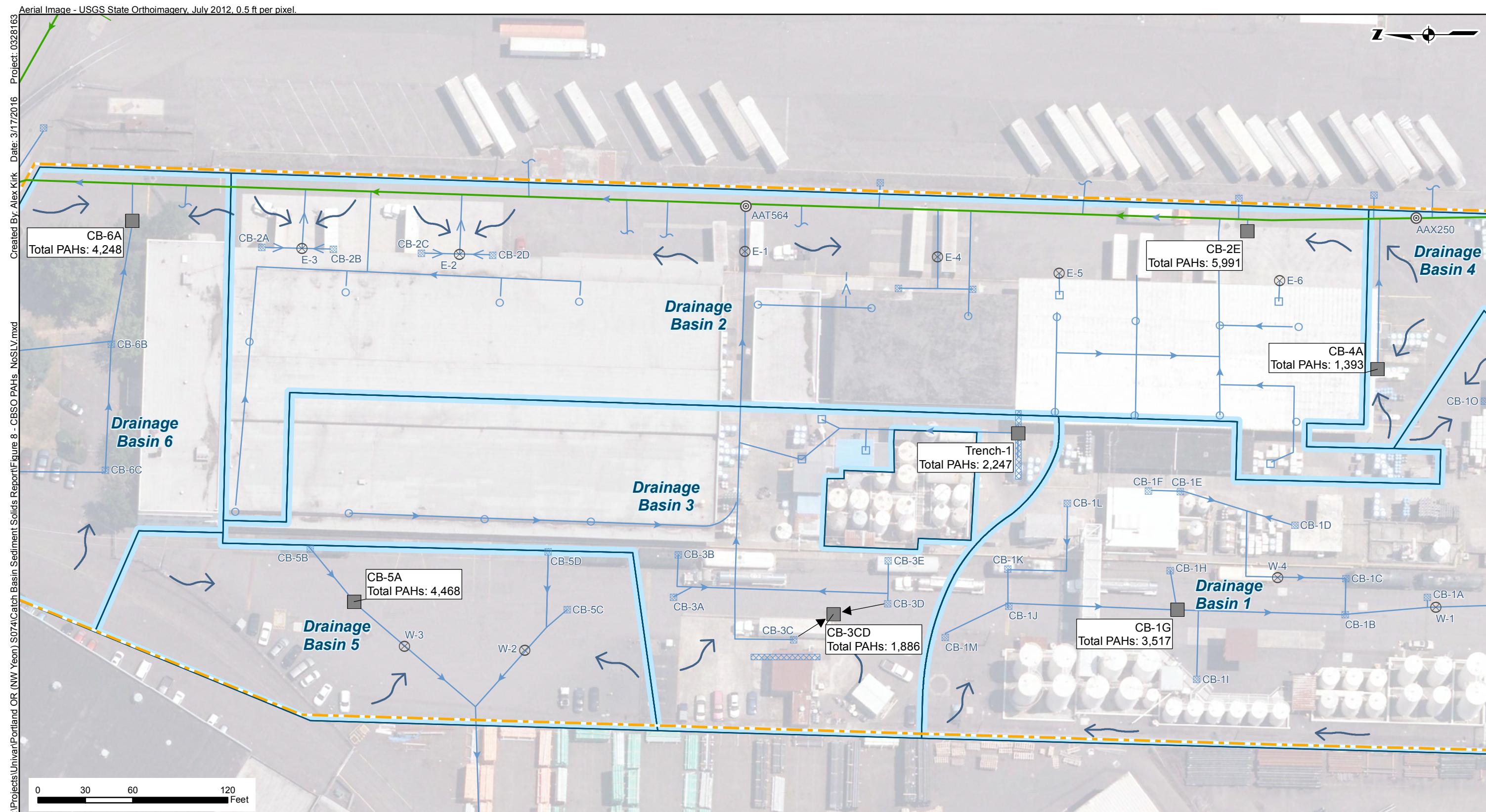
**Figure 6**



- Sample Location
- ▣ Trench Drain
- ▢ Catch Basin
- ▢ Private Stormwater Pipe
- ▢ Floor Drain
- ▢ City Stormwater Pipe
- ▢ Roof Drain
- ▢ City Storm Laterals
- ⊗ SPCC Control Valve
- ◎ Generalized Surface
- Storm Manhole
- Flow Direction

**Notes:**  
- All results given in micrograms per kilogram ( $\mu\text{g}/\text{kg}$ )  
- BEHP: Bis(2-ethylhexyl)phthalate  
- Samples taken on December 15, 2015  
- Sample CB-3CD is a composite of samples taken from CB-3C and CB-3D  
- All subsurface locations are approximate

**Figure 7**  
**BEHP Concentrations in Catch Basin Solids**  
**Catch Basin Solids Sampling Summary Report**  
**Univar USA Inc., NW Yeon Ave**  
**Portland, Oregon**



- Sample Location
- ▣ Catch Basin
- Floor Drain
- Roof Drain
- ⊗ SPCC Control Valve
- ◎ Storm Manhole
- ▨ Trench Drain
- Private Stormwater Pipe
- City Stormwater Pipe
- City Storm Laterals
- Drainage Basin
- Approximate Univair Property Boundary
- Generalized Surface
- Flow Direction

#### Notes:

- All results given in micrograms per kilogram ( $\mu\text{g}/\text{kg}$ )
- Total PAHs: Total Polycyclic Aromatic Hydrocarbons
- Total calculated with detected values only
- Samples taken on December 15, 2015
- Sample CB-3CD is a composite of samples taken from CB-3C and CB-3D
- All subsurface locations are approximate

**Figure 8**  
**Total PAH Concentrations in Catch Basin Solids**  
**Catch Basin Solids Sampling Summary Report**  
**Univar USA Inc., NW Yeon Ave**  
**Portland, Oregon**

*Tables*

Table 1

*Summary of Drainage Basins*  
*Stormwater Source Control Evaluation Work Plan*  
*Univar USA Inc.*  
*December 2015*

Drainage Basin	Number of Catch Basins	Approximate Area Drained (square feet)	Description	Connections to Stormwater Main
1	14	93,848	Nine catch basins drain the southern half of rail spur. Three catch basins drain the loading dock area which includes the drum fill area. Stormwater collected in the solvent tank farm area is inspected and discharged to the asphalt surface adjacent to CB-1I. Two catch basins drain the general storage area south of the loading dock.	Single lateral from basin is directly connected to City of Portland-owned 42" stormwater line on site at the lateral identified as S12 on Figure 2.
2	6	105,253	Eastern portion of the site including east drive, covered storage structures, and the eastern half of the warehouse. Roof drains from tar and corrugated metal roofs tie into the 42-inch main and drain to the asphalt or concrete surface from the sides of the loading dock. Two floor drains within the covered storage area discharge stormwater collected in surface depressions to the concrete surface of the east drive.	1) 6 catch basins are directly connected to City of Portland-owned 42" stormwater line on site via 3 laterals 2) 3 roof drains are directly connected to City of Portland-owned 42" stormwater line on site. 3) 2 catch basins and 1 underground lateral pipe are directly connected to the City of Portland-owned 42" stormwater line from off site.
3	5	65,122	Three floor drains and one trench drain from the loading dock area adjacent to the corrosive tank farm and drum fill area. Roof drains from the warehouse tar roof. Five catch basins and one trench drain from the central rail spur area.	Lateral from basin is directly connected to City of Portland-owned 42" stormwater line on site.
4	3	75,664	Three catch basins drain the southern portion of site used for used container storage and truck parking. Drainage includes runoff from the remediation building corrugated metal roof.	1) 2 catch basins are directly connected to City of Portland-owned 42" stormwater line on site. 2) 1 roof drain is directly connected to City of Portland-owned 42" stormwater line on site. 3) 1 non-stormwater catch basin from remediation system is directly connected to City of Portland-owned 42" stormwater line on site. 4) 2 underground lateral pipes without a surface access are directly connected to the City of Portland-owned 42" stormwater line on site. 5) 2 catch basins and 5 underground lateral pipes are directly connected to the City of Portland-owned 42" stormwater line from off site.
5	4	34,756	Four catch basins drain the north-western portion of site including rail spur, truck unloading, and employee parking.	1) Lateral from basin is directly connected to City of Portland-owned 42" stormwater line on American Steel property. 2) Underground lateral pipe without surface access is directly connected to the City of Portland-owned 42" stormwater line on site.
6	5	47,527	Five catch basins drain the northern portion of the site mainly used for employee parking.	Lateral from basin is directly connected to City of Portland-owned 42" stormwater line on site at the lateral identified as N9 on Figure 2.

**Notes:**

The ICM groundwater treatment system discharges treated groundwater via catch basin CB-4D directly to the City of Portland owned 42-inch stormwater line via NPDES Permit No. 101613.

Stormflow connections are based on field observations, historical reports (BRI 2004, HLA 1996), and information obtained from City of Portland maps available online at <http://www.portlandmaps.com>.

**Table 2**  
*Stormwater Line Inspection Summary  
 Stormwater Source Control Evaluation Work Plan  
 Univar USA Inc.  
 December 2015*

Manhole/Lateral	Size (in)	Material	Storm Water Flow <sup>1</sup> (Yes/No)	Influent Direction	Ownership	Observations
AAT577	-	-	-	-	City of Portland	Start of survey from the north. Manhole not observed.
N-1	6	PVC	Yes	West	Univar	Drainage Basin 1 employee parking lot catch basins.
N-2	4	Cast Iron	No	West	Univar / Historical	Assumed to be an abandoned line; potential historical roof drain.
N-3	4	PVC	Yes	West	Univar	Drainage Basin 2 east loading bay catch basins.
N-4	6	Cast Iron	Yes	West	Univar	Drainage Basin 2 roof drains.
N-5	4	PVC	Yes	West	Univar	Drainage Basin 2 east loading bay catch basins.
N-6	4	Cast Iron	Yes	East	Container Recovery Inc	Drains adjacent property.
N-7	4	Cast Iron	No	West	Univar / Historical	Observed to be defective and may be an abandoned line; potential historical roof drain.
N-8	4	Cast Iron	No	West	Univar / Historical	Observed to be defective and may be an abandoned line; potential historical roof drain.
N-9 / AAT564	8	Concrete / Brick	Yes	West	Univar	Drainage Basin 3 and upstream drainage to COP-owned 42" line
N-10	4	Cast Iron	No	West	Univar / Historical	May be an abandoned line; potential historical roof drain.
N-11	4	Cast Iron	Yes	East	Container Recovery Inc	Sourced from adjacent property. Flow observed during survey.
AAX261	-	Brick	-	-	City of Portland	Start of survey from the south. Manhole not observed.
S-1	6	Concrete	No	West	Wilhelm Trucking	Sourced from adjacent property.
S-2	4	Cast Iron	Yes	East	ABF/ANSR Trucking	Sourced from adjacent property.
S-3	4	Cast Iron	No	West	Univar	WTS discharge.
S-4	6	PVC	Yes	West	Univar	ICM roof drainage.
S-5	12	Concrete	Yes	East	ABF/ANSR	Sourced from adjacent property.
S-6	8	Concrete	Yes	East	ABF/ANSR	Sourced from adjacent property.
S-7 / AAX252	8	Concrete / Brick	No	West	Index Steel	Sourced from adjacent property. Potentially abandoned.
S-8	6	Cast Iron	No	East	Container Recovery Inc	Sourced from adjacent property. Potentially abandoned.
S-9	6	Cast Iron	Yes	East	Container Recovery Inc	Sourced from adjacent property.
S-10	6	Cast Iron	Yes	East	Container Recovery Inc	Sourced from adjacent property.
S-11	4	Cast Iron	Yes	East	Container Recovery Inc	Sourced from adjacent property.
S-12	8	Concrete	Yes	West	Univar	Sourced from Drainage Basin 1 and upstream drainage to COP-owned 42" line
S-13	6	Concrete	Yes	East	Container Recovery	Sourced from adjacent property.
S-14	6	Cast Iron	Yes	East	Container Recovery	Sourced from adjacent property.
AAX250	-	Brick	-	-	City of Portland	-
X-1	-	-	-	West	Univar	Abandoned
X-2	-	-	-	West	Univar	Drawings indicate this is sourced from Univar roof drains.
X-3	-	-	-	East	Container Recovery Inc	Unknown
X-4	-	-	-	West	Univar	Drawings indicate this is sourced from Univar roof drains.
X-5	-	-	-	East	Container Recovery Inc	Adjacent site CB
X-6	-	-	-	West	Univar	Drawings indicate this is sourced from Univar catch basin CB-2E.
X-7	-	-	-	East	Container Recovery Inc	Adjacent site CB
X-8	-	-	-	West	Univar	Drawings indicate this is sourced from Univar catch basin CB-4A.

**Notes:**

<sup>1</sup> = Flow observed during June 10, 2010 video survey. Approximately 0.50 inches of precipitation observed at City of Portland HYDRA Rainfall Network northwest stations.

<http://or.water.usgs.gov/non-usgs/bes/>

Table 3

Catch Basin Solids Analytical Results  
Stormwater Source Control Evaluation  
Univar USA Inc.

Constituent	Unit	CAS #	JSCS Screening Level Values <sup>1</sup>		Background <sup>2</sup> DEQ 2015 Oregon Background Metals Concentrations in Soil (Portland Basin)	Analytical Method <sup>3</sup>	CB1G-S-151215	CB2E-S-151215	CB3CD-S-1581215	CB4A-S-151215	CB5A-S-151215	CB6A-S-151215	TRENCH1-S-151215	
			Toxicity	Bioaccumulation										
			MacDonald PECs and other SQVs	DEQ 2007 Bioaccumulative Sediment SLVs										
			µg/kg	µg/kg	µg/kg		12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	
<b>Metals</b>														
Arsenic	µg/kg	7440-38-2	33,000	7,000	8,800	EPA 6020A	15,000	4,900	2,700	13,000	3,200	1,800 j	24,000	
Cadmium	µg/kg	7440-43-9	4,980	1,000	630	EPA 6020A	1,100	1,400	1,100	2,200	1,200	1,100	1,800	
Chromium	µg/kg	7440-47-3	111,000	--	76,000	EPA 6020A	200,000 J-	75,000 J-	70,000 J-	86,000 J-	44,000 J+	92,000 J-	270,000 J-	
Copper	µg/kg	7440-50-8	149,000	--	34,000	EPA 6020A	190,000	88,000	92,000	87,000	76,000 J+	62,000	160,000	
Lead	µg/kg	7439-92-1	128,000	17,000	79,000	EPA 6020A	71,000	86,000	40,000	110,000	49,000	38,000	210,000	
Manganese	µg/kg	7439-96-5	1,100,000	--	1,800,000	EPA 6020A	450,000 J+	520,000 J+	340,000 J+	580,000 J+	360,000	270,000 J+	520,000 J+	
Mercury	µg/kg	7439-97-6	1,060	70	230	EPA 7471A	140 J-	19 J-	79 J-	310 J-	650 J-	74 J-	130 J-	
Nickel	µg/kg	7440-02-0	48,600	--	47,000	EPA 6020A	96,000	52,000	47,000	57,000	29,000	48,000 J	130,000	
Zinc	µg/kg	7440-66-6	459,000	--	180,000	EPA 6020A	900,000	820,000	500,000	2,000,000	1,000,000	890,000 J	2,700,000	
<b>PCBs Aroclors</b>														
Aroclor 1016	µg/kg	12674-11-2	530	--	--	EPA 8082A	0.11 U	0.12 U	0.090 U	0.11 U	0.12 U	0.22 U	0.10 U	
Aroclor 1221	µg/kg	11104-28-2	--	--	--	EPA 8082A	0.76 U	0.81 U	0.61 U	0.75 U	0.80 U	1.5 U	0.68 U	
Aroclor 1232	µg/kg	11141-16-5	--	--	--	EPA 8082A	0.49 U	0.53 U	0.40 U	0.49 U	0.52 U	0.95 U	0.44 U	
Aroclor 1242	µg/kg	53469-21-9	--	--	--	EPA 8082A	0.47 U	0.50 U	0.38 U	0.46 U	0.50 U	0.90 U	0.42 U	
Aroclor 1248	µg/kg	12672-29-6	1,500	--	--	EPA 8082A	0.36 U	0.38 U	0.29 U	0.35 U	0.38 U	0.69 U	0.32 U	
Aroclor 1254	µg/kg	11097-69-1	300	--	--	EPA 8082A	0.20 U	0.21 U	0.16 U	0.20 U	0.21 U	0.39 U	3.6 U	
Aroclor 1260	µg/kg	11096-82-5	200	--	--	EPA 8082A	0.29 U	0.31 U	0.23 U	0.29 U	0.31 U	0.56 U	5.2 U	
Aroclor 1262	µg/kg	37324-23-5	--	--	--	EPA 8082A	0.43 U	0.45 U	0.34 U	0.42 U	0.45 U	0.82 U	7.6 U	
Aroclor 1268	µg/kg	11100-14-4	--	--	--	EPA 8082A	0.47 U	350 J+	0.38 U	0.46 U	0.50 U	31	1,200 J+	
Total PCB Aroclors <sup>4</sup>	µg/kg	1336-36-3	676	0.39	--	EPA 8082A	0.76 U	350	0.61 U	0.75 U	0.80 U	31	1,200	
<b>Organochlorine Pesticides</b>														
2,4'-DDD	µg/kg	53-19-0	--	--	--	EPA 8081B	0.67 UJ	7.6 J+	0.27 UJ	1.6 J+	7.4 J+	2.4 J-	14 J+	
2,4'-DDE	µg/kg	3424-82-6	--	--	--	EPA 8081B	11 J-	2.6 J+	0.27 UJ	0.66 UJ	1.2 J+	4.2 J-	3.8 J+	
2,4'-DDT	µg/kg	789-02-6	--	--	--	EPA 8081B	2.1 J-	1.4 J+	1.2 J+	2.9 J+	2.5 J+	500 J-	0.64 UJ	
4,4'-DDD	µg/kg	72-54-8	28	0.33	--	EPA 8081B	3.6 UJ	6.3 J+	3.4 J+	1.5 UJ	3.9 J+	0.54 UJ	18 J+	
4,4'-DDE	µg/kg	72-55-9	31.3	0.33	--	EPA 8081B	2.3 UJ	7.5 J+	8.7 J+	1.3 UJ	4.9 J+	3.4 UJ	29 J+	
4,4'-DDT	µg/kg	50-29-3	0.33	--	--	EPA 8081B	3.7 J-	9.6 J+	22 J+	21 J+	4.2 J+	110 J-	25 J+	
Aldrin	µg/kg	309-00-2	40	--	--	EPA 8081B	0.89 J-	0.16 J+	1.5 J+	0.67 J+	0.37 J+	3.2 J-	0.58 J+	
alpha-Chlordane	µg/kg	5103-71-9	--	--	--	EPA 8081B	0.30 UJ	15 J+	4.9 J+	0.30 UJ	0.53 J+	0.58 UJ	17 J+	
Chlordane	µg/kg	57-74-9	17.6	0.37	--	EPA 8081B	3.1 UJ	120 J+	110 J+	3.1 UJ	1.7 UJ	6.0 UJ	110 J+	
Dieledrin	µg/kg	60-57-1	61.8	0.0081	--	EPA 8081B	1.8 J-	0.14 UJ	1.1 J+	0.26 UJ	0.14 UJ	0.51 UJ	6.3 J+	
Endosulfan I (Alpha)	µg/kg	959-98-8	--	--	--	EPA 8081B	11 J-	0.30 J+	0.092 UJ	0.23 UJ	0.79 J+	0.44 UJ	0.41 UJ	
Endosulfan II (Beta)	µg/kg	33213-65-9	--	--	--	EPA 8081B	1.1 J-	4.4 J+	0.55 J+	0.49 J+	1.7 J	0.76 J-	0.43 UJ	
Endosulfan sulfate	µg/kg	1031-07-8	--	--	--	EPA 8081B	0.10 UJ	0.078 J+	1.4 J+	0.10 UJ	0.51 J+	0.20 UJ	0.18 UJ	
Endrin	µg/kg	72-20-8	207	--	--	EPA 8081B	0.84 J-	3.5 J+	1.6 J+	0.21 UJ	3.5 J+	0.41 UJ	5.4 J+	
Endrin aldehyde	µg/kg	7421-93-4	--	--	--	EPA 8081B	1.1 J-	0.24 UJ	14 J	1.5 J	42 J	5.1 J-	3.6 J	
Endrin ketone	µg/kg	53494-70-5	--	--	--	EPA 8081B	23 J-	70 J+	24 J+	19 J+	15 J+	6.7 J-	280 J+	
gamma-Chlordane	µg/kg	5566-34-7	--	--	--	EPA 8081B	1.7 J-	21 J+	7.1 J+	0.92 J+	2.2 J+	4.2 J-	11 J+	
Heptachlor	µg/kg	76-44-8	10	--	--	EPA 8081B	0.34 UJ	0.52 J+	0.14 UJ	0.33 UJ	0.30 J+	0.65 UJ	0.60 UJ	
Heptachlor epoxide	µg/kg	1024-57-3	16	--	--	EPA 8081B	0.087 UJ	0.047 UJ	8.3 J+	0.086 UJ	0.35 J+	0.17 UJ	0.16 UJ	
Methoxychlor	µg/kg	72-43-5	--	--	--	EPA 8081B	5.6 J-	6.9 J+	5.5 J+	2.9 J+	4.4 J+	4.9 J-	25 J+	
Toxaphene	µg/kg	8001-35-2	--	--	--	EPA 8081B	17 UJ	9.3 UJ	7.0 UJ	17 UJ	9.2 UJ	34 UJ	31 UJ	
<b>VOCs</b>														
1,1,1-Trichloroethane	µg/kg	71-55-6	--	--	--	EPA 8260C	0.50 U	0.67 U	0.55 U	0.39 U	0.64 U	1.5 U	0.61 U	
1,1-Dichloroethane	µg/kg	75-34-3	--	--	--	EPA 8260C	0.32 U	0.43 U	1.8	0.25 U	0.41 U	0.93 U	0.38 U	
1,2-Dichloroethane	µg/kg	107-06-2												

Table 3

Catch Basin Solids Analytical Results  
Stormwater Source Control Evaluation  
Univar USA Inc.

Constituent	Unit	CAS #	JSCS Screening Level Values <sup>1</sup>		Background <sup>2</sup> <small>DEQ 2013 Oregon Background Metals Concentrations in Soil (Portland Basin)</small>	Analytical Method <sup>3</sup>	CB1G-S-151215	CB2E-S-151215	CB3CD-S-1581215	CB4A-S-151215	CB5A-S-151215	CB6A-S-151215	TRENCH1-S-151215
			Toxicity	Bioaccumulation									
			MacDonald PECs and other SQVs	DEQ 2007 Bioaccumulative Sediment SLVs									
			µg/kg	µg/kg			12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015
<b>VOCs continued</b>													
Toluene	µg/kg	108-88-3	--	--	--	EPA 8260C	1.2 U	95	2.9 U	0.39 U	6.2	29	0.62 U
trans-1,2-Dichloroethene	µg/kg	156-60-5	--	--	--	EPA 8260C	0.66 U	0.90 U	0.73 U	0.52 U	0.85 U	2.0 U	0.81 U
Trichloroethene	µg/kg	79-01-6	2,100	--	--	EPA 8260C	0.50 U	0.67 U	0.63 j	0.39 U	0.64 U	1.5 U	0.61 U
Xylenes	µg/kg	1330-20-7	--	--	--	EPA 8260C	6.3	0.64 j	3.7	0.34 U	0.56 U	1.3 U	0.52 U
<b>Phthalate Esters</b>													
Bis(2-ethylhexyl)phthalate	µg/kg	117-81-7	800	330	--	EPA 8270D	65,000	15,000	17,000	40,000	16,000	16,000	40,000
Butylbenzylphthalate	µg/kg	85-68-7	--	--	--	EPA 8270D	13,000	2,600	590	370 U	920	1,600	650
Dibutyl phthalate	µg/kg	84-74-2	100	60	--	EPA 8270D	510 j	1,200	440 j	160 j	430 j	310 j	430 j
Diethyl phthalate	µg/kg	84-66-2	600	--	--	EPA 8270D	35 U	39 U	30 U	51 U	74 U	82 U	30 U
Dimethyl phthalate	µg/kg	131-11-3	--	--	--	EPA 8270D	15,000	660	800	360	650	600	810
Di-n-octyl phthalate	µg/kg	117-84-0	--	--	--	EPA 8270D	2,700	12 U	2,000	820 j	750 j	1,900 j	5,900
<b>Polycyclic Aromatic Hydrocarbons</b>													
2-Methylnaphthalene	µg/kg	91-57-6	200	--	--	EPA 8270D	22 j	130	31 j	37 j	53	31 j	32 j
Acenaphthene	µg/kg	83-32-9	300	--	--	EPA 8270D	11 U	34 j	9.1 U	11 U	18 j	21 U	10 U
Acenaphthylene	µg/kg	208-96-8	200	--	--	EPA 8270D	18 j	17 j	9.1 U	16 j	30 j	28 j	13 j
Anthracene	µg/kg	120-12-7	845	--	--	EPA 8270D	27 j	70	15 j	15 j	47 j	71 j	19 j
Benzo(a)anthracene	µg/kg	56-55-3	1,050	--	--	EPA 8270D	130	190	55	52	190	140	62
Benzo(a)pyrene	µg/kg	50-32-8	1,450	--	--	EPA 8270D	160	240	130	93	260	220	100
Benzo(b)fluoranthene	µg/kg	205-99-2	--	--	--	EPA 8270D	340	510	280	180	570	560	240
Benzo(g,h,i)perylene	µg/kg	191-24-2	300	--	--	EPA 8270D	210	200	120	81	12 U	210	130
Benzo(k)fluoranthene	µg/kg	207-08-9	13,000	--	--	EPA 8270D	130	110	83	94	440 J-	440	190
Chrysene	µg/kg	218-01-9	1,290	--	--	EPA 8270D	350	420	200	130	490	430	140
Dibenzo(a,h)anthracene	µg/kg	53-70-3	1,300	--	--	EPA 8270D	11 U	12 U	31 j	31 j	12 U	74 j	27 j
Fluoranthene	µg/kg	206-44-0	2,230	37,000	--	EPA 8270D	500	790	300	230	700 J+	550	390
Fluorene	µg/kg	86-73-7	536	--	--	EPA 8270D	11 U	50	9.1 U	19 j	34 j	70 j	13 j
Indeno(1,2,3-cd)pyrene	µg/kg	193-39-5	100	--	--	EPA 8270D	11 U	160	67 j	42 j	12 U	150 j	57 j
Naphthalene	µg/kg	91-20-3	561	--	--	EPA 8270D	700	1,700	24 j	23 j	36 j	24 j	34 j
Phenanthrene	µg/kg	85-01-8	--	1,170	--	EPA 8270D	200	460	130	140	300	460	200
Pyrene	µg/kg	129-00-0	1,520	1,900	--	EPA 8270D	730	910	420	210	1,300	790	600
Total PAHs <sup>4</sup>	µg/kg	--	--	--	--		3,517	5,991	1,886	1,393	4,468	4,248	2,247

## Notes

Shaded cells indicate the most conservative JSCS screening level value.  
Shaded cells indicate the sample result is greater than background and exceeds the most conservative JSCS screening level screening value.

Detected results shown in **bold**.

-- = Not applicable

j = The analyte was positively identified but was determined to be an estimated concentration by the laboratory

J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.

J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits

J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits

U = Compound was analyzed for, but not detected. The associated numerical value is the SQL.

UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

JSCS - Joint Source Control Strategy

PAHs = Polycyclic Aromatic Hydrocarbons

PCBs = polycyclic chlorinated biphenyls

SLVs = Screening level values

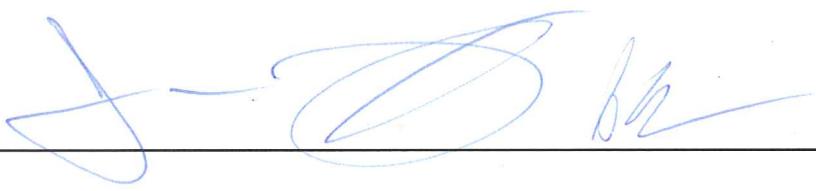
SQVs = Sediment quality guidelines

VOCs = volatile organic compounds

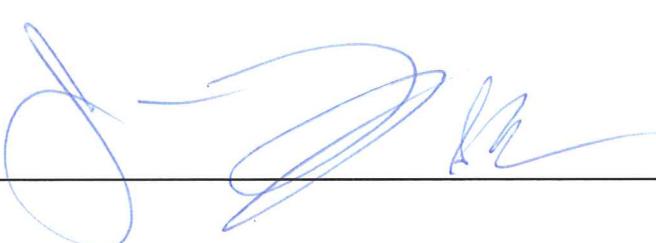
<sup>1</sup> = Portland Harbor Joint Source Control Strategy, Final, Table 3-1 Revision, July 2007<sup>2</sup> = Development of Oregon Background Metals Concentrations in Soils. Technical Report. ODEQ 2013<sup>3</sup> = All analyses performed by TestAmerica - Seattle, WA.<sup>4</sup> = Total calculated with detected values only.

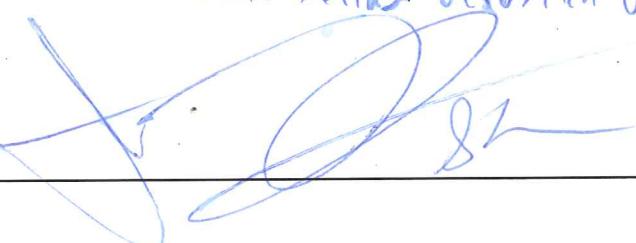
*Appendix A*  
*Catch Basin Sampling Field*  
*Notes*

Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1235 Weather: 40°F CLOUDY, DRY Samplers: JDT ST		
Catch Basin ID # <u>CB-6A</u>				
Location: DRAINAGE BASIN - 6 Activities in catchment: EMPLOYEE PARKING LOT AND TRUCK TRAFFIC, NO INDUSTRIAL.	Catch Basin Depth (TD): 3'-1" Depth to Water: 11 inches Depth to Sediment: 3'-0.5" <sup>SOLIDS</sup> below Sediment Thickness: 0.5" Height of Water Column: 2'-2"			
Sampling Device: EXTENSION POLE WITH STAINLESS STEEL SPOON ATTACHED ATTACHED.				
Sample Description:				
Color	Grain Size	Moisture	Filter Sock	Notes: (Sheen etc)
dk gray black	silt/sand	SATURATED	SOIL NO	light sheen
SAMPLE ID	SAMPLE TIME	ANALYSES REQUIRED	CONTAINER TYPE	COMPOSITE?
CB6A-S-151215 @ 1325		Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	2-8oz JARS 3-40ML VIALS	NO
FIELD OBSERVATIONS Catch basin condition, repairs needed)  Rectangular 2x3 feet catch basin. Good condition, no filter metal grate. Heavy leaves/pine needles content with solids.				
Decontamination procedure: Alconox Soap + water, DI				
Disposal method of IDW: N/A				
Other notes: Sample collected from bottom of catch basin all corners. Rectangular slight sheen on water, pine needles, leaves are moderate <sup>to heavy</sup> <sup>SOLIDS</sup> in catch basin, light <sup>SOLIDS</sup> attached on asphalt around				
Sampler Signature(s): catch basin with moderate pine needles.				



Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1348 Weather: 40°F CLOUDY, DRY Samplers: JD + ST		
Catch Basin ID # CB-ZE				
Location: DRAINAGE BASIN - 2 Activites in catchment: TRUCK TRAFFIC, COVERED DRAIN AREA RUNOFF		Catch Basin Depth (TD): 34" DEEP Depth to Water: 10" Depth to Sediment: 10.05" Sediment Thickness: 0.5" Height of Water Column: 24"		
Sampling Device: EXTENSION POLE WITH STAINLESS STEEL SPOON				
Sample Description:				
Color	Grain Size	Moisture	Filter Sock	Notes: (Sheen etc)
Black	SILTY/CLAY	Saturated	Yes	YES MODERATE SHEEN
SAMPLE ID	SAMPLE TIME	ANALYSES REQUIRED	CONTAINER TYPE	COMPOSITE?
CBZE-5-151215 @ 1405		Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	2-8oz JARS 3-40ml VIALS	YES OF FILTER AND BOTTOM OF CB
FIELD OBSERVATIONS Catch basin condition, repairs needed Circular, 3 FEET DIAMETER, GOOD CONDITION, METAL GRATE WITH FILTER. Filter fair to poor could use new one.				
Decontamination procedure: 10% ALCONIX SOAP, WATER, DI				
Disposal method of IDW: NA				
Other notes: 200g OF SOLIDS FROM FILTER AND 80g FROM BOTTOM OF CATCH BASIN. light leaf/organics, SATURATED. light solids around CBZE ON concrete.				
Sampler Signature(s) :				

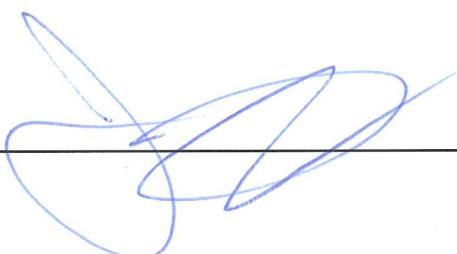


Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1420 Weather: 40°F, SPRINKLES, Cloudy Samplers: JD+SF		
Catch Basin ID # CB-4A				
Location: DRAINAGE BASIN-4 Activites in catchment: TRUCK TRAFFIC AND EMPTY DRUM TOTE STORAGE AREA	Catch Basin Depth (TD): 30"			
Sampling Device: POLE + Stainless Steel Spowl	Depth to Water: 7 1/4" Depth to Sediment: 14 1/4" (14 1/4" - 22 3/4") Sediment Thickness: 1 1/4" Height of Water Column: 22 3/4"			
Sample Description:				
Color	Grain Size	Moisture	Filter Sock	Notes: (Sheen etc)
Brown	Silt/grav	Saturated	YES	NO SHEEN, SOME RUST TRASH
SAMPLE ID	SAMPLE TIME	ANALYSES REQUIRED	CONTAINER TYPE	COMPOSITE?
CB4A-151215 @ 1440		Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	Z-80Z JARS Z-40ml vials	Yes Filter and bottom of CB 4A.
FIELD OBSERVATIONS Catch basin condition, repairs needed)  Rectangular, 2x2', FAIR CONDITION, OXIDIZED, FILTER SOME GOOD.				
Decontamination procedure: SOAP, WATER, DI				
Disposal method of IDW: MIA				
Other notes: 80% solids from bottom of CB4A 20% from filter. Saturated, oxidized, low organic, no sheen.				
Sampler Signature(s): 				

Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1446 Weather: 40°F, cloudy, spots of rain Samplers: JDIST		
Catch Basin ID # CB-16				
Location: DRAINAGE BASIN - 1 Activities in catchment: Solvast tank farm area, drum fill area, rail car loading, truck traffic Sampling Device: POLE WITH STAINLESS STEEL POLE	Catch Basin Depth (TD): 33' Depth to Water: 9 1/4' Depth to Sediment: unknown/east measured Sediment Thickness: unknown/east measured. Height of Water Column: 24 3/4'			
Sample Description:				
Color BLACK	Grain Size SILT/SAND	Moisture SATURATED	Filter Sock ABSORBANT BOOM NO	Notes: (Sheen etc) moderate light sheen, light little angular, trash
SAMPLE ID CB16-5-151215 @ 1500	SAMPLE TIME	ANALYSES REQUIRED Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	CONTAINER TYPE Z-80Z JAR Z-40ml vials	COMPOSITE? NO
FIELD OBSERVATIONS Catch basin condition, repairs needed) 2' dia circular with GRATE, GOOD condition, ABSORBANT (norther) BOOM in catch basin				
Decontamination procedure: ALCONOX, water, DI				
Disposal method of IDW: N/A				
Other notes: All SOLIDS COLLECTED FROM around bottom of CB16 NO FILTER. ABSORBANT BOOM, moderate sheen, some trash, little to NO solid deposits on asphalt around CB16				
Sampler Signature(s): 				

11

Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1528 Weather: 40°F / CLOUDY, SPINKLES Samplers: JD + ST		
Catch Basin ID # CB-5A				
Location: DRAINAGE BASIN - 5 Activities in catchment: neutralization area, Loading area, railcar loading TRUCK TRAFFIC		Catch Basin Depth (TD): 37" Depth to Water: 14 1/8" Depth to Sediment: 36 3/4" Sediment Thickness: 1/4" Height of Water Column: 18 7/8"		
Sampling Device: POLE AND SS-SPOON				
Sample Description:				
Color	Grain Size	Moisture	Filter Sock	Notes: (Sheen etc)
dk grey slate	very fine	saturated	NO	light sheen, trunk.
SAMPLE ID	SAMPLE TIME	ANALYSES REQUIRED	CONTAINER TYPE	COMPOSITE?
CB5A-S-151215 @ 1535 8- Rinate Sample 8-MG SAMPLE	RB-151215 1555	Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	2-80Z JARS 2-40ml VOCs	NO
FIELD OBSERVATIONS Catch basin condition, repairs needed)  XYZ' square catch basin. Good condition, grate, no filter, Absorbant bloom in catch basin.				
Decontamination procedure: Alconox, water, DI				
Disposal method of IDW: N/A				
Other notes: Sample collected from around bottom of CB5A, NO filter, light sheen, NO solid buildup on asphalt around CB5A.				
Sampler Signature(s): Trunk, little organics				

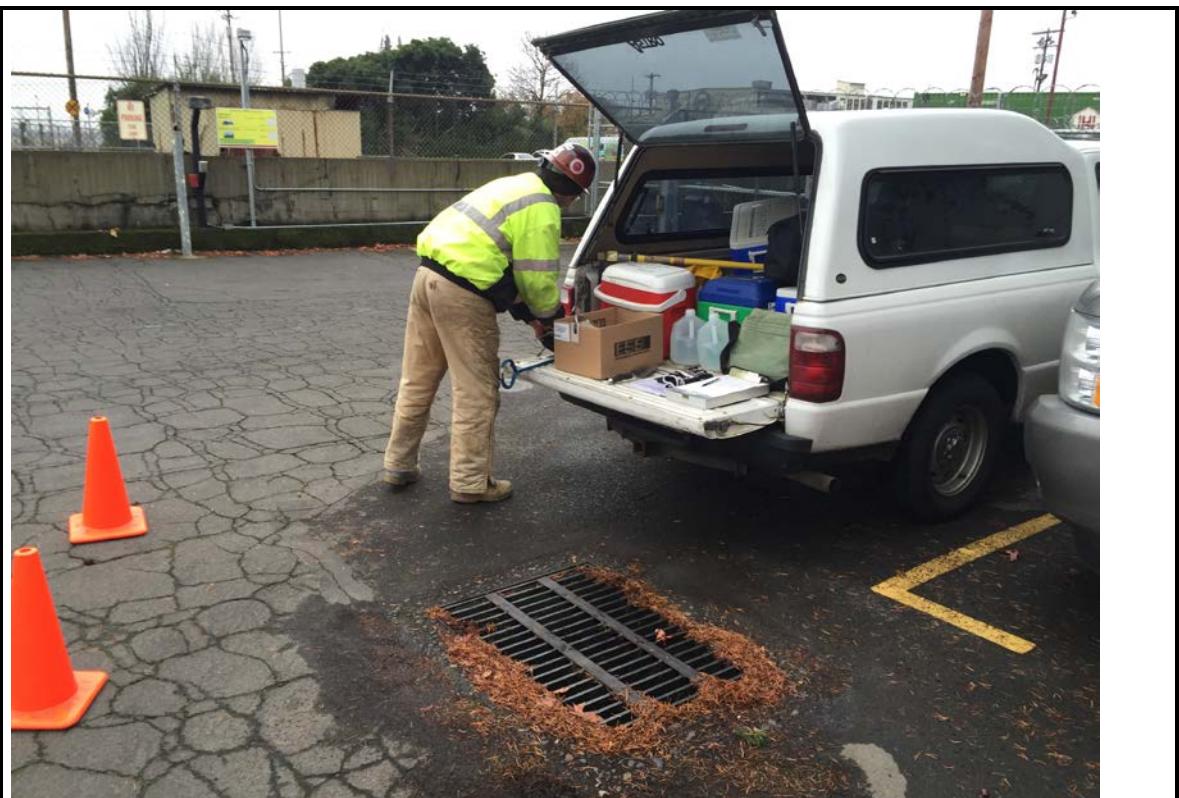


Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1616 Weather: 38°F, cloudy, dry Samplers: JD + ST		
Catch Basin ID # CB-3E ADGCB				
Location: DRAINAGE BASIN -3 Activities in catchment: CORROSIVE TANK FARM LOADING, Railcar loading with truck traffic		Catch Basin Depth (TD): 41" Depth to Water: 17 1/4 Depth to Sediment: CANT measure > NONE RECOVERED Sediment Thickness: UNKNOWN		
Sampling Device: POLE WITH SH-SPOON		Height of Water Column: 23 3/4"		
Sample Description:				
Color N/A	Grain Size N/A	Moisture Saturated	Filter Sock No	Notes: (Sheen etc) light sheen
SAMPLE ID	SAMPLE TIME	ANALYSES REQUIRED	CONTAINER TYPE	COMPOSITE?
NONE		Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	N/A	
FIELD OBSERVATIONS Catch basin condition, repairs needed) CB-3E - 2' dia, circular grate, contains NO solids, not recoverable. 50 lbs				
Decontamination procedure:				
Disposal method of IDW: N/A				
Other notes: NO SOLIDS RECOVERED, TRASH + LEAVES moderate Clear water. MOVED TO CATCH BASINS CB3C & CB3D TO consolidate for Solids sample.				
Sampler Signature(s): 				

Project: Univar Catch Basin Sediment Sampling Location: Yeon Ave, Portland, Oregon Project Number 328163.04 FIELD NOTES / ERM WEST		Date: 12/15/15 Set up time: 1424 Weather: 38°F, cloudy, drizzle Samplers: JD & ST		
Catch Basin ID # <u>CB-3D + CB-3C COMPOSITE</u>				
Location: <u>DRAIN BASIN-3</u> Activities in catchment: <u>CORROSION TANK FARM, rail cars, truck traffic</u>	Catch Basin Depth (TD): <u>32'</u> -CB-3D <u>67'</u> -CB-3C <u>CB3D = 8 3/4" CB3C =</u>			
Sampling Device: <u>POLE + SS-SPOON</u>	Depth to Water: Depth to Sediment: Sediment Thickness: Height of Water Column: <u>23 1/4"</u>			
Sample Description:				
Color	Grain Size	Moisture	Filter Sock	Notes: (Sheen etc)
<u>black</u>	<u>silt/sandy gravel</u>	<u>Saturated</u>	<u>NO</u>	<u>light sheen, light organics</u>
SAMPLE ID	SAMPLE TIME	ANALYSES REQUIRED	CONTAINER TYPE	COMPOSITE?
<u>CB3E</u> <u>CB-3D</u> <u>CB3D-S-151215</u>	<u>151215 @ 1645</u> <u>1635</u>	Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	<u>Z-80Z SCUBA</u> <u>Z-40ml vials</u>	<u>YES</u> <u>(CB-3D)</u> <u>+ CB-3C</u>
FIELD OBSERVATIONS Catch basin condition, repairs needed)  <u>2' dia, circular, grate - CB-3D, GOOD, NO filter</u> <u>4x4' square, grate - CB-3C, GOOD, OIL water separator</u> <u>NO filter, leaking</u>				
Decontamination procedure: <u>SOAP/WATER/DI</u>				
Disposal method of IDW: <u>N/A</u>				
Other notes: <u>Collected samples from bottom of catch basins, no filters</u> <u>Light solids deposits around CB-3C + 3D Asphalt.</u> <u>Light sheen on both waters.</u>				
Sampler Signature(s):  				

Project:	Univar Catch Basin Sediment Sampling	Date:	12/15/15	
Location:	Yeon Ave, Portland, Oregon	Set up time:	1700	
Project Number	328163.04	Weather:	36°F, cloudy	
FIELD NOTES / ERM WEST		Samplers:	JDIST DICKY	
<b>Catch Basin ID #</b> <u>TRENCH 1</u>				
Location:	Prairie Basin - 3	Catch Basin Depth (TD):	8 1/4"	
Activites in catchment:	Corrosive tank farm and Forklift traffic	Depth to Water:	NONE	
Sampling Device:	Stainless Steel Spoon	Depth to Sediment:	5 1/2"	
		Sediment Thickness:	3/4"	
		Height of Water Column:	N/A	
<b>Sample Description:</b>				
Color	Grain Size	Moisture	Filter Sock	Notes: (Sheen etc)
DK gray BLACK	Silt/Sand	moist	NO	No Sheen dry/moist solids
<u>SAMPLE ID</u>	<u>SAMPLE TIME</u>	<u>ANALYSES REQUIRED</u>	<u>CONTAINER TYPE</u>	<u>COMPOSITE?</u>
TRENCH 1-S-151215 @ 1715		Metals VOCs PAHs Phthalates PCBs Organochlorine Pesticides	Z-8oz Jars Z-4oz vials	NO
FIELD OBSERVATIONS Catch basin condition, repairs needed)  9x" x 8 1/2" rectangular, good condition, gravel, NO filter, DRY				
Decontamination procedure: Soap / water / DI				
Disposal method of IDW: N/A				
Other notes: Collected sample from length of trench in the 3 different areas. No water, little gravel, organics. No light solids to no deposits on concrete around trench.				
Sampler Signature(s): <u>J.D. St. John</u>				

*Appendix B*  
*Catch Basin Sampling Photo Log*



**Photograph: 1** Preparation for sampling at catch basin CB-6A looking southeast.

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**Photograph: 2** Sampling CB-6A using a stainless steel spoon attached to a sample pole.

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<b>Photograph:</b> 3	Catch basin sampling location CB-2E looking south.	
Univar Yeon	<b>ERM</b>	Portland, Oregon



<b>Photograph:</b> 4	Using a stainless steel bowl to composite solids recovered at CB-2E.	
Univar Yeon	<b>ERM</b>	Portland, Oregon



**Photograph:** 5      Catch basin sample location CB-4A looking south.

Univar Yeon

**ERM**

Portland, Oregon



**Photograph:** 6      Catch basin CB-4A showing oil water separator and stagnant water with filter fabric.

Univar Yeon

**ERM**

Portland, Oregon



**Photograph:** 7      *Removing the grate cover at catch basin sample location CB-1G using a manhole hook.*

Univar Yeon

**ERM**

Portland, Oregon



**Photograph:** 8      *Collecting composite solids sample at CB-1G using and stainless steel spoon, bowl, and a sample pole.*

Univar Yeon

**ERM**

Portland, Oregon

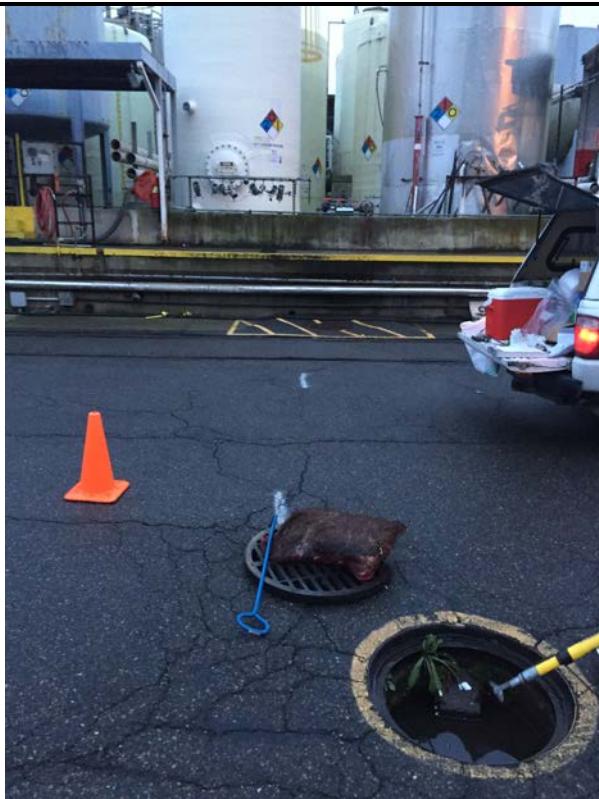


**Photograph:** 9      *Sampling catch basin CB-3E using a sampling pole, stainless steel spoon and bowl.*

Univar Yeon

**ERM**

Portland, Oregon



**Photograph:** 10      *Collecting solids sample from catch basin CB-3D to composite with CB-3E in order to procure enough volume for analysis.*

Univar Yeon

**ERM**

Portland, Oregon

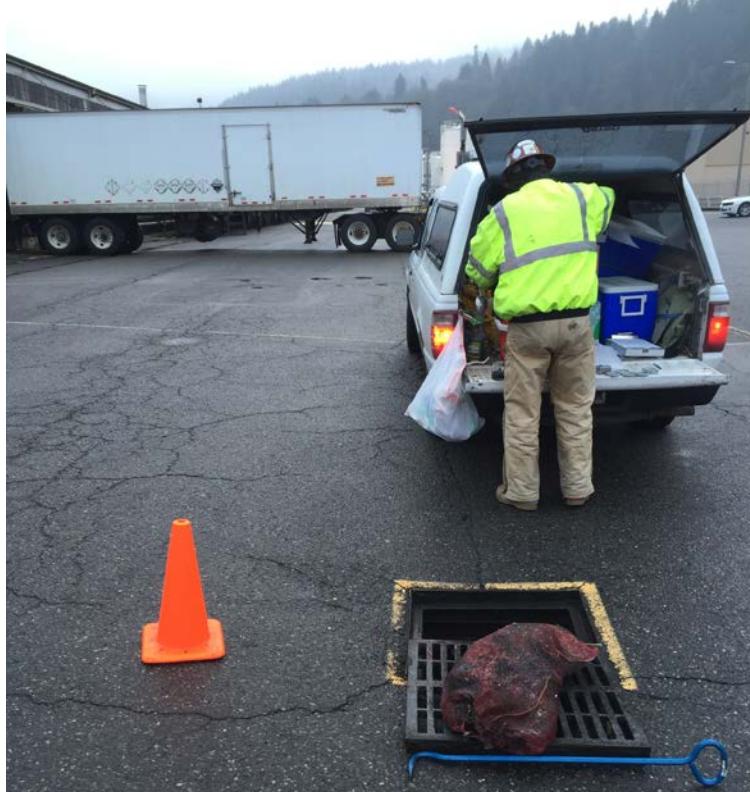


**Photograph: 11** Collecting solids sample from catch basin CB-3C to composite with CB-3E and CB-3D in order to procure enough volume for analysis.

Univar Yeon

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**Photograph: 12** Catch basin sample location CB-5A looking south with absorbent pillow and manhole hook.

Univar Yeon

**ERM**

Portland, Oregon

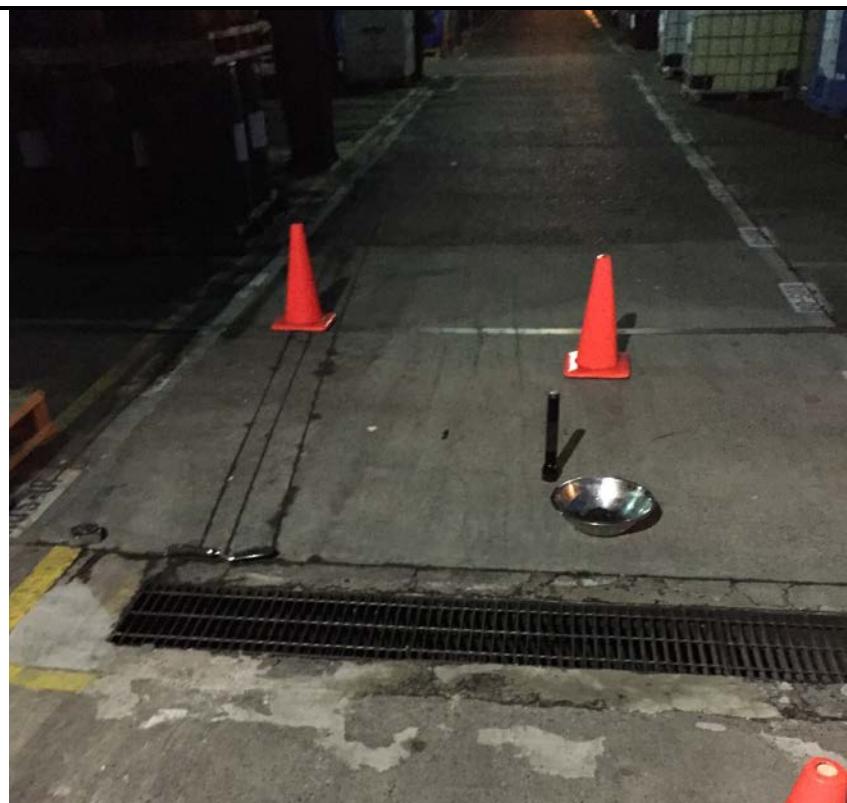


**Photograph:** 13      Catch basin CB-5A with oil water separator cleanout, and slight sheen on stagnant water.

Univar Yeon

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Portland, Oregon

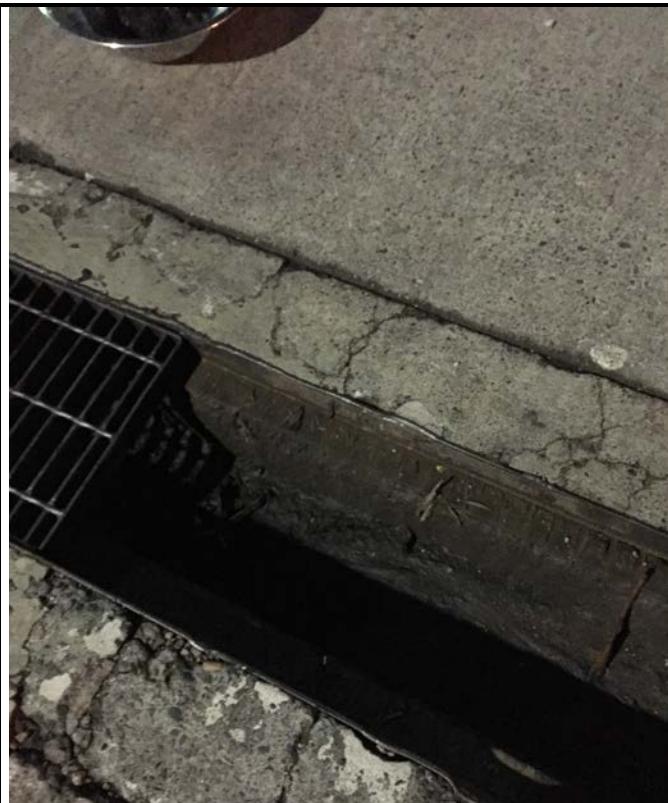


**Photograph:** 14      Solids sampling location Trench-1 on loading dock.

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**Photograph:** 15 | Trench-1 opened showing solids build up for sample collection.

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Portland, Oregon

*Appendix C*  
*Laboratory Analytical Report and*  
*Data Validation Memo*

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle  
5755 8th Street East  
Tacoma, WA 98424  
Tel: (253)922-2310

TestAmerica Job ID: 580-55916-1

Client Project/Site: Univar Portland (NW Yeon)  
Revision: 3

For:

ERM-West  
1001 SW 5th Avenue  
Suite 1010  
Portland, Oregon 97204

Attn: Dylan Stankus

Sarah Murphy

Authorized for release by:

2/9/2016 2:37:10 PM

Sarah Murphy, Project Manager I

(253)922-2310

[sarah.murphy@testamericainc.com](mailto:sarah.murphy@testamericainc.com)

### LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

# Table of Contents

Cover Page .....	1
Table of Contents .....	2
Case Narrative .....	3
Definitions .....	6
Client Sample Results .....	8
QC Sample Results .....	32
Chronicle .....	59
Certification Summary .....	64
Sample Summary .....	65
Chain of Custody .....	66
Receipt Checklists .....	68

# Case Narrative

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Job ID: 580-55916-1

### Laboratory: TestAmerica Seattle

#### Narrative

#### Comments

Report revised on 01/29/2016 to report data down to MDLs.

Report revised on 02/03/2016 to remove unnecessary "B" flags from 8081 data and fix linking for 8082 MS/MSD.

Report revised on 02/09/2016 to report 8081 data from correct column after re-calculation.

#### Receipt

The samples were received on 12/16/2015 10:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.8° C and 1.7° C.

#### GC/MS VOA

Method(s) 8260C: The LCSD associated with analytical batch 580-208714 fell below acceptance criteria for the compounds Ethylbenzene, m-Xylene & p-Xylene, o-Xylene, Styrene, Toluene, and trans-1,2-Dichloroethene. An attempt to re-analyze the remaining vial of samples in job 55916 was made on a separate instrument however QC failures and instrument malfunction caused the data to be unusable.

Therefore the data has been reported. Qualified results were flagged (\*) for low LCSD. The data for job 55916 is reported with a potential low bias.

Method(s) 8260C: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for analytical batch 580-208714 recovered outside control limits for multiple analytes.

Method(s) 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 580-208712 and analytical batch 580-208714 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 580-208714 recovered outside acceptance criteria, low biased, for Ethylbenzene and o-Xylene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC/MS Semi VOA

Method(s) 8270D: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 580-208145 recovered outside control limits for the following analytes: Acenaphthene and Butyl benzyl phthalate.

Method(s) 8270D: The following analyte(s) recovered outside control limits for the LCS/LCSD associated with preparation batch 580-208145 and analytical batch 580-208231: Anthracene, Acenaphthylene, and Benzo[a]pyrene. These analytes were outside the Marginal Exceedance Limits, primary data is qualified and reported. Out-of-hold re-extract batch 208745 is presented for confirmation as secondary data with passing quality control in analytical batch 208823. Reanalysis of the following sample was performed outside of the analytical holding time as the re-extraction took place out of hold: RB-1-151215 (580-55916-6).

Method(s) 8270D: Surrogate recovery for the following sample was outside control limits: CB5A-S-151215 (580-55916-5[MS]). Chromatographic evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8270D: The continuing calibration verification (CCV) associated with batch 580-208823 recovered above the upper control limit for Di-n-octyl phthalate. The reporting samples associated with this CCV were non-detects for the affected analytes with a high bias. Samples with hits for the affected target were re-analyzed and reported in a batch with a passing CCV).

Method(s) 8270D: The following samples were diluted to bring the concentration of target analytes within the calibration range: CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7) and TRENCH1-S-151215 (580-55916-8). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

Method(s) 8081A: The continuing calibration verification (CCV) associated with batch 440-301755 recovered above the upper control limit

## Case Narrative

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

### Job ID: 580-55916-1 (Continued)

#### Laboratory: TestAmerica Seattle (Continued)

for 4,4'-DDD. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: RB-1-151215 (580-55916-6) and (CCV 440-301755/39).

Method(s) 8081B: The following samples required a Florisil clean-up, via EPA Method 3620B , to reduce matrix interferences: CB6A-S-151215 (580-55916-1), CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7), TRENCH1-S-151215 (580-55916-8), (LCS 580-208163/2-B), (LCSD 580-208163/3-B) and (MB 580-208163/1-A).

Method(s) 8081B: The following samples were diluted due to the nature of the sample matrix: CB6A-S-151215 (580-55916-1), CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7) and TRENCH1-S-151215 (580-55916-8). Elevated reporting limits (RLs) are provided.

Method(s) 8081B: The closing continuing calibration verification (CCV) standard associated with batch 580-209826 failed to meet acceptance limits. The associated samples were re-analyzed following a successful CCV and produced similar results, indicating that the sample matrix is adversely affecting the instrument and causing the failures.

Method(s) 8081B: The following analyte(s) recovered outside control limits for the LCS/LCSD associated with preparation batch 580-208163 and analytical batch 580-209826: Endrin aldehyde. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

Method(s) 8081B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 580-208163 and analytical batch 580-209826 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method(s) 8081B: Surrogate Decachlorobiphenyl recovery for the following samples was outside control limits: CB6A-S-151215 (580-55916-1), CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7) and TRENCH1-S-151215 (580-55916-8). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8081B: The chromatograms for the following samples indicate that matrix interferences may be biasing the results: CB6A-S-151215 (580-55916-1), CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7) and TRENCH1-S-151215 (580-55916-8).

Method(s) 8081B: The following samples have clear evidence of the presence of chlordane based on the presence of alpha and gamma chlordane; however, the chlordane peaks in the sample do not closely match the laboratory's Technical Chlordane standard: CB2E-S-151215 (580-55916-2) and TRENCH1-S-151215 (580-55916-8). As a result, there is increased quantitative uncertainty associated with this result.

Method(s) 8082A: Surrogate recovery for the following samples were outside control limits: CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB3CD-S-1581215 (580-55916-7)and TRENCH1-S-151215 (580-55916-8). Evidence of matrix interference due to high target analytes present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8082A: The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: CB6A-S-151215 (580-55916-1), CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7), TRENCH1-S-151215 (580-55916-8), (LCS 580-208163/2-A), (LCSD 580-208163/3-A) and (MB 580-208163/1-A). The reagent lot number used was: 116930

Method(s) 8082A: The opening continuing calibration verification (CCV) standard associated with batch 580-209755 for the following samples failed to meet acceptance limits for surrogate DCB on the front column; the confirmation column and closing bracketing CCV were within acceptance limits.

Method(s) 8082A: In preparation batch 580-208163 and analytical batch 580-209755 the closing CCV for PCB 1268 failed %D criteria.

## Case Narrative

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

### Job ID: 580-55916-1 (Continued)

#### Laboratory: TestAmerica Seattle (Continued)

Matrix carry over from the previous samples in the bracket is suspected to be the cause. The opening CCV for PCB 1268 in the bracket passed. The samples were not reanalyzed due to lack of sample volume and the data has been reported.

Method(s) 8082A: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-208163 and analytical batch 580-209755 was outside control limits. Sample matrix interference is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

Method(s) 3550B: Extracts were very dark, viscous, and full of particulate material. CB6A-S-151215 (580-55916-1), CB2E-S-151215 (580-55916-2), CB4A-S-151215 (580-55916-3), CB1G-S-151215 (580-55916-4), CB5A-S-151215 (580-55916-5), CB5A-S-151215 (580-55916-5[MS]), CB5A-S-151215 (580-55916-5[MSD]), CB3CD-S-1581215 (580-55916-7) and TRENCH1-S-151215 (580-55916-8)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Definitions/Glossary

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.

### GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
F2	MS/MSD RPD exceeds control limits
F1	MS and/or MSD Recovery is outside acceptance limits.
X	Surrogate is outside control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
*	RPD of the LCS and LCSD exceeds the control limits
*	LCS or LCSD is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time

### GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
F3	Duplicate RPD exceeds the control limit
F2	MS/MSD RPD exceeds control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

## Glossary

### Abbreviation

These commonly used abbreviations may or may not be present in this report.

□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)

TestAmerica Seattle

## Definitions/Glossary

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

### Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB6A-S-151215**

**Lab Sample ID: 580-55916-1**

Date Collected: 12/15/15 13:25

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 23.0

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	9.8	1.5	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Benzene	ND		9.8	1.5	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Tetrachloroethene	ND		9.8	2.0	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
1,1-Dichloroethane	ND		4.9	0.93	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
<b>1,2-Dichloroethane</b>	<b>1.0</b>	<b>J</b>	4.9	0.73	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Methylene Chloride	ND		73	1.2	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
<b>Toluene</b>	<b>29</b>	<b>*</b>	9.8	1.5	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
o-Xylene	ND	*	9.8	1.3	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Styrene	ND	*	9.8	0.98	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
trans-1,2-Dichloroethene	ND	*	9.8	2.0	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Trichloroethene	ND	*	9.8	1.5	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Ethylbenzene	ND	*	9.8	2.0	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
cis-Dichloroethylene	ND		9.8	1.5	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Chloroform	ND	*	9.8	1.5	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
m-Xylene & p-Xylene	ND	*	9.8	0.98	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
Xylenes, Total	ND		9.8	1.3	ug/Kg	⊗	12/17/15 10:45	12/29/15 16:55	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	121		71 - 136				12/17/15 10:45	12/29/15 16:55	1
4-Bromofluorobenzene (Surr)	107		70 - 120				12/17/15 10:45	12/29/15 16:55	1
Dibromofluoromethane (Surr)	109		75 - 132				12/17/15 10:45	12/29/15 16:55	1
Toluene-d8 (Surr)	94		80 - 120				12/17/15 10:45	12/29/15 16:55	1
Trifluorotoluene (Surr)	89		65 - 140				12/17/15 10:45	12/29/15 16:55	1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2-Methylnaphthalene</b>	<b>31</b>	<b>J</b>	85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
Acenaphthene	ND		85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Acenaphthylene</b>	<b>28</b>	<b>J</b>	85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Anthracene</b>	<b>71</b>	<b>J</b>	85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Benzo[a]anthracene</b>	<b>140</b>		85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Benzo[a]pyrene</b>	<b>220</b>		130	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Benzo[b]fluoranthene</b>	<b>560</b>		85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Benzo[g,h,i]perylene</b>	<b>210</b>		110	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Benzo[k]fluoranthene</b>	<b>440</b>		110	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Bis(2-ethylhexyl) phthalate</b>	<b>16000</b>		2600	210	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Butyl benzyl phthalate</b>	<b>1600</b>	<b>B</b>	850	210	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Chrysene</b>	<b>430</b>		110	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Dibenz(a,h)anthracene</b>	<b>74</b>	<b>J</b>	170	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Diethyl phthalate</b>	<b>82</b>	<b>J B</b>	850	64	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Dimethyl phthalate</b>	<b>600</b>		430	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Di-n-butyl phthalate</b>	<b>310</b>	<b>J</b>	2100	210	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Di-n-octyl phthalate</b>	<b>1900</b>	<b>J</b>	2100	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Fluoranthene</b>	<b>550</b>		85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Fluorene</b>	<b>70</b>	<b>J</b>	85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Indeno[1,2,3-cd]pyrene</b>	<b>150</b>	<b>J</b>	170	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Naphthalene</b>	<b>24</b>	<b>J</b>	85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Phenanthrene</b>	<b>460</b>		85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10
<b>Pyrene</b>	<b>790</b>		85	21	ug/Kg	⊗	12/23/15 08:49	12/30/15 23:36	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB6A-S-151215**

**Lab Sample ID: 580-55916-1**

Date Collected: 12/15/15 13:25

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 23.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	146		42 - 151	12/23/15 08:49	12/30/15 23:36	10

## Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	3.2	J	4.3	0.51	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
alpha-Chlordane	ND		4.3	0.58	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Chlordane (technical)	ND		43	6.0	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
2,4'-DDD	2.4	J	8.6	1.3	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
4,4'-DDD	0.54	J B	8.6	0.32	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
2,4'-DDE	4.2	J	8.6	1.3	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
4,4'-DDE	3.4	J B	8.6	0.61	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
2,4'-DDT	500		8.6	0.69	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
4,4'-DDT	110		8.6	0.65	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Endosulfan, alpha	ND		4.3	0.44	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Endosulfan, beta	0.76	J	8.6	0.46	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Endosulfan sulfate	ND		8.6	0.20	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Endrin	ND		8.6	0.41	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Endrin aldehyde	5.1	J *	8.6	0.85	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Endrin ketone	6.7	J	8.6	0.52	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
gamma-Chlordane	4.2	J	4.3	0.58	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Heptachlor	ND		8.6	0.65	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Heptachlor epoxide	ND		4.3	0.17	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Methoxychlor	4.9	J	43	0.55	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Toxaphene	ND		430	34	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10
Dieldrin	ND		8.6	0.51	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:05	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	55	X	60 - 128	12/18/15 11:04	01/20/16 11:05	10
Tetrachloro-m-xylene	87		35 - 129	12/18/15 11:04	01/20/16 11:05	10

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		4.3	0.22	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1221	ND		4.7	1.5	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1232	ND		4.7	0.95	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1242	ND		4.3	0.90	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1248	ND		4.7	0.69	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1254	ND		4.3	0.39	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1260	ND *		4.3	0.56	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1262	ND		4.3	0.82	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
PCB-1268	31		4.3	0.90	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1
Polychlorinated biphenyls, Total	31		4.7	1.5	ug/Kg	⊗	12/18/15 11:04	01/15/16 06:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	57		50 - 140	12/18/15 11:04	01/15/16 06:33	1
Tetrachloro-m-xylene	75		45 - 135	12/18/15 11:04	01/15/16 06:33	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1800	J	2200	780	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10
Cadmium	1100		870	82	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB6A-S-151215**

**Lab Sample ID: 580-55916-1**

Date Collected: 12/15/15 13:25

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 23.0

## Method: 6020A - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	92000	F1	2200	270	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10
Copper	62000	F1	1700	420	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10
Lead	38000		2200	210	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10
Manganese	270000	F1	4300	740	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10
Nickel	48000		2200	350	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10
Zinc	890000	F1	22000	4800	ug/Kg	⊗	12/18/15 13:06	12/19/15 02:50	10

## Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	74	J	79	24	ug/Kg	⊗	12/22/15 12:25	12/22/15 15:23	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	23		0.10		%			12/21/15 10:45	1
Percent Moisture	77		0.10		%			12/21/15 10:45	1

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB2E-S-151215**

**Lab Sample ID: 580-55916-2**

Date Collected: 12/15/15 14:05

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 41.4

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	4.5	0.67	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Benzene	ND		4.5	0.67	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Tetrachloroethene	ND		4.5	0.90	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
1,1-Dichloroethane	ND		2.2	0.43	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
1,2-Dichloroethane	ND		2.2	0.34	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Methylene Chloride	ND		34	0.54	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Toluene	95	*	4.5	0.67	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
o-Xylene	ND	*	4.5	0.58	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Styrene	0.54	J *	4.5	0.45	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
trans-1,2-Dichloroethene	ND	*	4.5	0.90	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Trichloroethene	ND	*	4.5	0.67	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Ethylbenzene	ND	*	4.5	0.90	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
cis-Dichloroethylene	ND		4.5	0.67	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Chloroform	ND	*	4.5	0.67	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
m-Xylene & p-Xylene	0.64	J *	4.5	0.45	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
Xylenes, Total	0.64	J	4.5	0.58	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:21	1
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)		121		71 - 136			12/17/15 10:45	12/29/15 17:21	1
4-Bromofluorobenzene (Surr)		99		70 - 120			12/17/15 10:45	12/29/15 17:21	1
Dibromofluoromethane (Surr)		108		75 - 132			12/17/15 10:45	12/29/15 17:21	1
Toluene-d8 (Surr)		98		80 - 120			12/17/15 10:45	12/29/15 17:21	1
Trifluorotoluene (Surr)		81		65 - 140			12/17/15 10:45	12/29/15 17:21	1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	130		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Acenaphthene	34	J	47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Acenaphthylene	17	J	47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Anthracene	70		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Benzo[a]anthracene	190		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Benzo[a]pyrene	240		71	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Benzo[b]fluoranthene	510		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Benzo[g,h,i]perylene	200		59	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Benzo[k]fluoranthene	110		59	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Butyl benzyl phthalate	2600	B	470	120	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Chrysene	420		59	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Dibenz(a,h)anthracene	ND		95	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Diethyl phthalate	39	J B	470	35	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Dimethyl phthalate	660		240	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Di-n-butyl phthalate	1200		1200	120	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Di-n-octyl phthalate	ND		1200	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Fluoranthene	790		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Fluorene	50		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Indeno[1,2,3-cd]pyrene	160		95	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Naphthalene	1700		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Phenanthrene	460		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10
Pyrene	910		47	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:01	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB2E-S-151215**

**Lab Sample ID: 580-55916-2**

Date Collected: 12/15/15 14:05

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 41.4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	142		42 - 151	12/23/15 08:49	12/31/15 00:01	10

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	15000		14000	1200	ug/Kg	☀	12/23/15 08:49	01/04/16 20:21	100

Method: 8081B - Organochlorine Pesticides (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.16	J	1.2	0.14	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
alpha-Chlordane	15		1.2	0.16	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Chlordane (technical)	120		12	1.7	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
2,4'-DDD	7.6		2.4	0.36	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
4,4'-DDD	6.3	B	2.4	0.088	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
2,4'-DDE	2.6		2.4	0.36	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
4,4'-DDE	7.5	B	2.4	0.17	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
2,4'-DDT	1.4	J	2.4	0.19	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
4,4'-DDT	9.6		2.4	0.18	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Endosulfan, alpha	0.30	J	1.2	0.12	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Endosulfan, beta	4.4		2.4	0.13	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Endosulfan sulfate	0.078	J	2.4	0.055	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Endrin	3.5		2.4	0.11	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Endrin aldehyde	ND	*	2.4	0.24	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Endrin ketone	70		2.4	0.14	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
gamma-Chlordane	21		1.2	0.16	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Heptachlor	0.52	J	2.4	0.18	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Heptachlor epoxide	ND		1.2	0.047	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Methoxychlor	6.9	J	12	0.15	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Toxaphene	ND		120	9.3	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Dieldrin	ND		2.4	0.14	ug/Kg	☀	12/18/15 11:04	01/20/16 11:22	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	641	X	60 - 128				12/18/15 11:04	01/20/16 11:22	5
Tetrachloro-m-xylene	88		35 - 129				12/18/15 11:04	01/20/16 11:22	5

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.4	0.12	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1221	ND		2.6	0.81	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1232	ND		2.6	0.53	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1242	ND		2.4	0.50	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1248	ND		2.6	0.38	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1254	ND		2.4	0.21	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1260	ND	*	2.4	0.31	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
PCB-1262	ND		2.4	0.45	ug/Kg	☀	12/18/15 11:04	01/15/16 06:50	1
<b>PCB-1268</b>	<b>350</b>		12	2.5	ug/Kg	☀	12/18/15 11:04	01/19/16 17:14	5
<b>Polychlorinated biphenyls, Total</b>	<b>350</b>		13	4.1	ug/Kg	☀	12/18/15 11:04	01/19/16 17:14	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	144	X	50 - 140				12/18/15 11:04	01/15/16 06:50	1
DCB Decachlorobiphenyl	153	X	50 - 140				12/18/15 11:04	01/19/16 17:14	5
Tetrachloro-m-xylene	108		45 - 135				12/18/15 11:04	01/15/16 06:50	1

TestAmerica Seattle

## Client Sample Results

Client: ERM-West  
Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

### Client Sample ID: CB2E-S-151215

Date Collected: 12/15/15 14:05

Date Received: 12/16/15 10:15

#### Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	120		45 - 135	12/18/15 11:04	01/19/16 17:14	5

#### Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4900		940	340	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Cadmium	1400		370	36	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Chromium	75000		940	120	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Copper	88000		750	180	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Lead	86000		940	90	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Manganese	520000		1900	320	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Nickel	52000		940	150	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10
Zinc	820000		9400	2100	ug/Kg	xx	12/18/15 13:06	12/19/15 03:53	10

#### Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	19	J	48	14	ug/Kg	xx	12/22/15 12:25	12/22/15 15:25	1

#### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	41		0.10	%				12/21/15 10:45	1
Percent Moisture	59		0.10	%				12/21/15 10:45	1

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB4A-S-151215****Lab Sample ID: 580-55916-3**

Date Collected: 12/15/15 14:40

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 44.1

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	2.6	0.39	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Benzene	ND		2.6	0.39	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Tetrachloroethene	ND		2.6	0.52	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
1,1-Dichloroethane	ND		1.3	0.25	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
<b>1,2-Dichloroethane</b>	<b>0.29</b>	<b>J</b>	1.3	0.20	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Methylene Chloride	ND		20	0.31	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Toluene	ND	*	2.6	0.39	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
o-Xylene	ND	*	2.6	0.34	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Styrene	ND	*	2.6	0.26	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
trans-1,2-Dichloroethene	ND	*	2.6	0.52	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Trichloroethene	ND	*	2.6	0.39	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Ethylbenzene	ND	*	2.6	0.52	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
cis-Dichloroethylene	ND		2.6	0.39	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Chloroform	ND	*	2.6	0.39	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
m-Xylene & p-Xylene	ND	*	2.6	0.26	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
Xylenes, Total	ND		2.6	0.34	ug/Kg	⊗	12/17/15 10:45	12/29/15 17:48	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	119		71 - 136				12/17/15 10:45	12/29/15 17:48	1
4-Bromofluorobenzene (Surr)	102		70 - 120				12/17/15 10:45	12/29/15 17:48	1
Dibromofluoromethane (Surr)	108		75 - 132				12/17/15 10:45	12/29/15 17:48	1
Toluene-d8 (Surr)	95		80 - 120				12/17/15 10:45	12/29/15 17:48	1
Trifluorotoluene (Surr)	85		65 - 140				12/17/15 10:45	12/29/15 17:48	1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2-Methylnaphthalene</b>	<b>37</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
Acenaphthene	ND		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Acenaphthylene</b>	<b>16</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Anthracene</b>	<b>15</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Benzo[a]anthracene</b>	<b>52</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Benzo[a]pyrene</b>	<b>93</b>		67	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Benzo[b]fluoranthene</b>	<b>180</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Benzo[g,h,i]perylene</b>	<b>81</b>		56	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Benzo[k]fluoranthene</b>	<b>94</b>		56	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Butyl benzyl phthalate</b>	<b>370</b>	<b>J B</b>	450	110	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Chrysene</b>	<b>130</b>		56	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Dibenz(a,h)anthracene</b>	<b>31</b>	<b>J</b>	89	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Diethyl phthalate</b>	<b>51</b>	<b>J B</b>	450	33	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Dimethyl phthalate</b>	<b>360</b>		220	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Di-n-butyl phthalate</b>	<b>160</b>	<b>J</b>	1100	110	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Di-n-octyl phthalate</b>	<b>820</b>	<b>J</b>	1100	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Fluoranthene</b>	<b>230</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Fluorene</b>	<b>19</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Indeno[1,2,3-cd]pyrene</b>	<b>42</b>	<b>J</b>	89	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Naphthalene</b>	<b>23</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Phenanthrene</b>	<b>140</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10
<b>Pyrene</b>	<b>210</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:26	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB4A-S-151215**

**Lab Sample ID: 580-55916-3**

Date Collected: 12/15/15 14:40

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 44.1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	130		42 - 151	12/23/15 08:49	12/31/15 00:26	10

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	40000		13000	1100	ug/Kg	⊗	12/23/15 08:49	01/04/16 20:46	100

Method: 8081B - Organochlorine Pesticides (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.67	J	2.2	0.26	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
alpha-Chlordane	ND		2.2	0.30	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Chlordane (technical)	ND		22	3.1	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
2,4'-DDD	1.6	J	4.4	0.66	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
4,4'-DDD	1.5	J B	4.4	0.16	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
2,4'-DDE	ND		4.4	0.66	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
4,4'-DDE	1.3	J B	4.4	0.31	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
2,4'-DDT	2.9	J	4.4	0.36	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
4,4'-DDT	21		4.4	0.34	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Endosulfan, alpha	ND		2.2	0.23	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Endosulfan, beta	0.49	J	4.4	0.24	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Endosulfan sulfate	ND		4.4	0.10	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Endrin	ND		4.4	0.21	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Endrin aldehyde	1.5	J *	4.4	0.44	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Endrin ketone	19		4.4	0.27	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
gamma-Chlordane	0.92	J	2.2	0.30	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Heptachlor	ND		4.4	0.33	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Heptachlor epoxide	ND		2.2	0.086	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Methoxychlor	2.9	J	22	0.28	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Toxaphene	ND		220	17	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Dieldrin	ND		4.4	0.26	ug/Kg	⊗	12/18/15 11:04	01/20/16 11:38	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	139	X	60 - 128				12/18/15 11:04	01/20/16 11:38	10
Tetrachloro-m-xylene	67		35 - 129				12/18/15 11:04	01/20/16 11:38	10

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.2	0.11	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1221	ND		2.4	0.75	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1232	ND		2.4	0.49	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1242	ND		2.2	0.46	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1248	ND		2.4	0.35	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1254	ND		2.2	0.20	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1260	ND		2.2	0.29	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1262	ND		2.2	0.42	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
PCB-1268	ND		2.2	0.46	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
Polychlorinated biphenyls, Total	ND		2.4	0.75	ug/Kg	⊗	12/18/15 11:04	01/19/16 17:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	79		50 - 140				12/18/15 11:04	01/19/16 17:31	1
Tetrachloro-m-xylene	100		45 - 135				12/18/15 11:04	01/19/16 17:31	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB4A-S-151215**

**Lab Sample ID: 580-55916-3**

Date Collected: 12/15/15 14:40

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 44.1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	13000		810	290	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Cadmium	2200		320	31	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Chromium	86000		810	100	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Copper	87000		640	160	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Lead	110000		810	77	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Manganese	580000		1600	270	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Nickel	57000		810	130	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10
Zinc	2000000		8100	1800	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:31	10

## Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	310		45	13	ug/Kg	⊗	12/22/15 12:25	12/22/15 15:28	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	44		0.10		%			12/21/15 10:45	1
Percent Moisture	56		0.10		%			12/21/15 10:45	1

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB1G-S-151215****Lab Sample ID: 580-55916-4**

Date Collected: 12/15/15 15:00

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 44.4

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	3.3	0.50	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
Benzene	ND		3.3	0.50	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Tetrachloroethene</b>	<b>0.80</b>	<b>J</b>	3.3	0.66	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
1,1-Dichloroethane	ND		1.7	0.32	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>1,2-Dichloroethane</b>	<b>0.44</b>	<b>J</b>	1.7	0.25	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Methylene Chloride</b>	<b>0.41</b>	<b>J B</b>	25	0.40	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Toluene</b>	<b>1.2</b>	<b>J *</b>	3.3	0.50	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>o-Xylene</b>	<b>2.4</b>	<b>J *</b>	3.3	0.43	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Styrene</b>	<b>1.2</b>	<b>J *</b>	3.3	0.33	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
trans-1,2-Dichloroethene	ND	*	3.3	0.66	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
Trichloroethene	ND	*	3.3	0.50	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Ethylbenzene</b>	<b>0.97</b>	<b>J *</b>	3.3	0.66	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
cis-Dichloroethylene	ND		3.3	0.50	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
Chloroform	ND	*	3.3	0.50	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>m-Xylene &amp; p-Xylene</b>	<b>3.9</b>	<b>*</b>	3.3	0.33	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Xylenes, Total</b>	<b>6.3</b>		3.3	0.43	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:15	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	123		71 - 136				12/17/15 10:45	12/29/15 18:15	1
4-Bromofluorobenzene (Surr)	98		70 - 120				12/17/15 10:45	12/29/15 18:15	1
Dibromofluoromethane (Surr)	111		75 - 132				12/17/15 10:45	12/29/15 18:15	1
Toluene-d8 (Surr)	98		80 - 120				12/17/15 10:45	12/29/15 18:15	1
Trifluorotoluene (Surr)	83		65 - 140				12/17/15 10:45	12/29/15 18:15	1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2-Methylnaphthalene</b>	<b>22</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
Acenaphthene	ND		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Acenaphthylene</b>	<b>18</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Anthracene</b>	<b>27</b>	<b>J</b>	45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Benzo[a]anthracene</b>	<b>130</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Benzo[a]pyrene</b>	<b>160</b>		67	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Benzo[b]fluoranthene</b>	<b>340</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Benzo[g,h,i]perylene</b>	<b>210</b>		56	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Benzo[k]fluoranthene</b>	<b>130</b>		56	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Butyl benzyl phthalate</b>	<b>13000</b>	<b>B</b>	450	110	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Chrysene</b>	<b>350</b>		56	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
Dibenz(a,h)anthracene	ND		89	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Diethyl phthalate</b>	<b>35</b>	<b>J B</b>	450	33	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Dimethyl phthalate</b>	<b>15000</b>		220	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Di-n-butyl phthalate</b>	<b>510</b>	<b>J</b>	1100	110	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Fluoranthene</b>	<b>500</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
Fluorene	ND		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
Indeno[1,2,3-cd]pyrene	ND		89	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Naphthalene</b>	<b>700</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Phenanthrene</b>	<b>200</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Pyrene</b>	<b>730</b>		45	11	ug/Kg	⊗	12/23/15 08:49	12/31/15 00:51	10
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Terphenyl-d14 (Surr)	123		42 - 151				12/23/15 08:49	12/31/15 00:51	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB1G-S-151215**

**Lab Sample ID: 580-55916-4**

Date Collected: 12/15/15 15:00

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 44.4

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate	2700		1100	11	ug/Kg	☀	12/23/15 08:49	01/04/16 21:12	10

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL2**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	65000		13000	1100	ug/Kg	☀	12/23/15 08:49	01/04/16 21:37	100

**Method: 8081B - Organochlorine Pesticides (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.89	J	2.2	0.26	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
alpha-Chlordane	ND		2.2	0.30	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Chlordane (technical)	ND		22	3.1	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
2,4'-DDD	ND		4.5	0.67	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
4,4'-DDD	3.6	J B	4.5	0.17	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
2,4'-DDE	11		4.5	0.67	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
4,4'-DDE	2.3	J B	4.5	0.32	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
2,4'-DDT	2.1	J	4.5	0.36	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
4,4'-DDT	3.7	J	4.5	0.34	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Endosulfan, alpha	11		2.2	0.23	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Endosulfan, beta	1.1	J	4.5	0.24	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Endosulfan sulfate	ND		4.5	0.10	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Endrin	0.84	J	4.5	0.21	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Endrin aldehyde	1.1	J *	4.5	0.44	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Endrin ketone	23		4.5	0.27	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
gamma-Chlordane	1.7	J	2.2	0.30	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Heptachlor	ND		4.5	0.34	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Heptachlor epoxide	ND		2.2	0.087	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Methoxychlor	5.6	J	22	0.29	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Toxaphene	ND		220	17	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10
Dieldrin	1.8	J	4.5	0.26	ug/Kg	☀	12/18/15 11:04	01/20/16 11:55	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	47	X	60 - 128	12/18/15 11:04	01/20/16 11:55	10
Tetrachloro-m-xylene	94		35 - 129	12/18/15 11:04	01/20/16 11:55	10

**Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.2	0.11	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1221	ND		2.5	0.76	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1232	ND		2.5	0.49	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1242	ND		2.2	0.47	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1248	ND		2.5	0.36	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1254	ND		2.2	0.20	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1260	ND		2.2	0.29	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1262	ND		2.2	0.43	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
PCB-1268	ND		2.2	0.47	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1
Polychlorinated biphenyls, Total	ND		2.5	0.76	ug/Kg	☀	12/18/15 11:04	01/19/16 17:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	115		50 - 140	12/18/15 11:04	01/19/16 17:48	1
Tetrachloro-m-xylene	81		45 - 135	12/18/15 11:04	01/19/16 17:48	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB1G-S-151215**

**Lab Sample ID: 580-55916-4**

Date Collected: 12/15/15 15:00

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 44.4

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15000		1100	390	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Cadmium	1100		440	41	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Chromium	200000		1100	140	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Copper	190000		870	210	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Lead	71000		1100	100	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Manganese	450000		2200	370	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Nickel	96000		1100	180	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10
Zinc	900000		11000	2400	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:35	10

## Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	140		41	12	ug/Kg	⊗	12/22/15 12:25	12/22/15 15:30	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	44		0.10		%			12/21/15 10:45	1
Percent Moisture	56		0.10		%			12/21/15 10:45	1

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB5A-S-151215**

**Lab Sample ID: 580-55916-5**

Date Collected: 12/15/15 15:35

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 41.5

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	4.3	0.64	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Benzene	ND		4.3	0.64	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Tetrachloroethene	ND		4.3	0.85	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
1,1-Dichloroethane	ND		2.1	0.41	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
<b>1,2-Dichloroethane</b>	<b>0.52</b>	<b>J</b>	2.1	0.32	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Methylene Chloride	ND		32	0.51	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
<b>Toluene</b>	<b>6.2</b>	<b>*</b>	4.3	0.64	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
o-Xylene	ND	*	4.3	0.56	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Styrene	ND	*	4.3	0.43	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
trans-1,2-Dichloroethene	ND	*	4.3	0.85	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Trichloroethene	ND	*	4.3	0.64	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Ethylbenzene	ND	*	4.3	0.85	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
cis-Dichloroethylene	ND		4.3	0.64	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Chloroform	ND	*	4.3	0.64	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
m-Xylene & p-Xylene	ND	*	4.3	0.43	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
Xylenes, Total	ND		4.3	0.56	ug/Kg	⊗	12/17/15 10:45	12/29/15 18:42	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	119		71 - 136				12/17/15 10:45	12/29/15 18:42	1
4-Bromofluorobenzene (Surr)	105		70 - 120				12/17/15 10:45	12/29/15 18:42	1
Dibromofluoromethane (Surr)	109		75 - 132				12/17/15 10:45	12/29/15 18:42	1
Toluene-d8 (Surr)	95		80 - 120				12/17/15 10:45	12/29/15 18:42	1
Trifluorotoluene (Surr)	89		65 - 140				12/17/15 10:45	12/29/15 18:42	1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2-Methylnaphthalene</b>	<b>53</b>		48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Acenaphthene</b>	<b>18</b>	<b>J F2</b>	48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Acenaphthylene</b>	<b>30</b>	<b>J</b>	48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Anthracene</b>	<b>47</b>	<b>J F2</b>	48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Benzo[a]anthracene</b>	<b>190</b>		48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Benzo[a]pyrene</b>	<b>260</b>	<b>F1</b>	71	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Benzo[b]fluoranthene</b>	<b>570</b>		48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
Benzo[g,h,i]perylene	ND	F1	59	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Benzo[k]fluoranthene</b>	<b>440</b>	<b>F1</b>	59	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Butyl benzyl phthalate</b>	<b>920</b>	<b>B</b>	480	120	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Chrysene</b>	<b>490</b>		59	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
Dibenz(a,h)anthracene	ND	F1	95	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Diethyl phthalate</b>	<b>74</b>	<b>J F2 F1 B</b>	480	36	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Dimethyl phthalate</b>	<b>650</b>	<b>F1</b>	240	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Di-n-butyl phthalate</b>	<b>430</b>	<b>J F1</b>	1200	120	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Fluoranthene</b>	<b>700</b>	<b>F1</b>	48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Fluorene</b>	<b>34</b>	<b>J</b>	48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
Indeno[1,2,3-cd]pyrene	ND	F2	95	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Naphthalene</b>	<b>36</b>	<b>J</b>	48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Phenanthrene</b>	<b>300</b>		48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Pyrene</b>	<b>1300</b>		48	12	ug/Kg	⊗	12/23/15 08:49	12/31/15 01:16	10
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Terphenyl-d14 (Surr)	133		42 - 151				12/23/15 08:49	12/31/15 01:16	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB5A-S-151215**

**Lab Sample ID: 580-55916-5**

Date Collected: 12/15/15 15:35

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 41.5

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate	750	J F1	1200	12	ug/Kg	⊗	12/23/15 08:49	01/04/16 22:02	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	175	X	42 - 151				12/23/15 08:49	01/04/16 22:02	10

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	16000	F2	14000	1200	ug/Kg	⊗	12/23/15 08:49	01/04/16 23:18	100

## Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.37	J	1.2	0.14	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
alpha-Chlordane	0.53	J F1	1.2	0.16	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Chlordane (technical)	ND		12	1.7	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
2,4'-DDD	7.4		2.4	0.35	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
4,4'-DDD	3.9	B	2.4	0.088	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
2,4'-DDE	1.2	J	2.4	0.35	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
4,4'-DDE	4.9	F1 F2 B	2.4	0.17	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
2,4'-DDT	2.5		2.4	0.19	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
4,4'-DDT	4.2		2.4	0.18	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Endosulfan, alpha	0.79	J	1.2	0.12	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Endosulfan, beta	1.7	J	2.4	0.13	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Endosulfan sulfate	0.51	J F1	2.4	0.054	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Endrin	3.5	F2	2.4	0.11	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Endrin aldehyde	42	F1 F2 *	2.4	0.23	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Endrin ketone	15	F1 F2	2.4	0.14	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
gamma-Chlordane	2.2		1.2	0.16	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Heptachlor	0.30	J F1	2.4	0.18	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Heptachlor epoxide	0.35	J	1.2	0.046	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Methoxychlor	4.4	J F2	12	0.15	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Toxaphene	ND		120	9.2	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Dieldrin	ND		2.4	0.14	ug/Kg	⊗	12/18/15 11:04	01/20/16 12:11	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	513	X	60 - 128				12/18/15 11:04	01/20/16 12:11	5
Tetrachloro-m-xylene	96		35 - 129				12/18/15 11:04	01/20/16 12:11	5

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.4	0.12	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1221	ND		2.6	0.80	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1232	ND		2.6	0.52	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1242	ND		2.4	0.50	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1248	ND		2.6	0.38	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1254	ND		2.4	0.21	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1260	ND	F1 F2	2.4	0.31	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1262	ND		2.4	0.45	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
PCB-1268	ND		2.4	0.50	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1
Polychlorinated biphenyls, Total	ND		2.6	0.80	ug/Kg	⊗	12/18/15 11:04	01/19/16 18:06	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB5A-S-151215**

**Lab Sample ID: 580-55916-5**

Date Collected: 12/15/15 15:35

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 41.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	117		50 - 140	12/18/15 11:04	01/19/16 18:06	1
Tetrachloro-m-xylene	98		45 - 135	12/18/15 11:04	01/19/16 18:06	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3200	F2	1200	420	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Cadmium	1200		460	44	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Chromium	44000	F1 F2	1200	150	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Copper	76000	F1	920	230	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Lead	49000		1200	110	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Manganese	360000	F1	2300	390	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Nickel	29000	F2	1200	190	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10
Zinc	1000000	F1	12000	2600	ug/Kg	⊗	12/22/15 07:57	12/22/15 20:50	10

## Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	650	F1	43	13	ug/Kg	⊗	12/24/15 08:37	12/24/15 13:17	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	41		0.10		%			12/21/15 10:45	1
Percent Moisture	59		0.10		%			12/21/15 10:45	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: RB-1-151215****Lab Sample ID: 580-55916-6**

Date Collected: 12/15/15 15:55

Matrix: Water

Date Received: 12/16/15 10:15

**Method: 8260C - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.20	0.025	ug/L			12/21/15 16:54	1
<b>Benzene</b>	<b>0.030</b>	<b>J</b>	0.20	0.025	ug/L			12/21/15 16:54	1
Tetrachloroethene	ND		0.50	0.070	ug/L			12/21/15 16:54	1
1,1-Dichloroethane	ND		0.20	0.025	ug/L			12/21/15 16:54	1
1,2-Dichloroethane	ND		0.20	0.025	ug/L			12/21/15 16:54	1
Methylene Chloride	ND		0.50	0.11	ug/L			12/21/15 16:54	1
<b>Toluene</b>	<b>0.11</b>	<b>J</b>	0.20	0.025	ug/L			12/21/15 16:54	1
o-Xylene	ND		0.50	0.060	ug/L			12/21/15 16:54	1
Styrene	ND		0.50	0.10	ug/L			12/21/15 16:54	1
trans-1,2-Dichloroethene	ND		0.20	0.025	ug/L			12/21/15 16:54	1
Trichloroethene	ND		0.20	0.025	ug/L			12/21/15 16:54	1
Ethylbenzene	ND		0.20	0.030	ug/L			12/21/15 16:54	1
cis-Dichloroethylene	ND		0.20	0.025	ug/L			12/21/15 16:54	1
Chloroform	ND		0.20	0.030	ug/L			12/21/15 16:54	1
<b>m-Xylene &amp; p-Xylene</b>	<b>0.050</b>	<b>J</b>	0.50	0.050	ug/L			12/21/15 16:54	1
Vinyl chloride	ND		0.020	0.013	ug/L			12/21/15 16:54	1
Xylenes, Total	ND		0.50	0.060	ug/L			12/21/15 16:54	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	123		70 - 128					12/21/15 16:54	1
4-Bromofluorobenzene (Surr)	102		75 - 120					12/21/15 16:54	1
Dibromofluoromethane (Surr)	110		85 - 115					12/21/15 16:54	1
Toluene-d8 (Surr)	96		75 - 125					12/21/15 16:54	1
Trifluorotoluene (Surr)	93		80 - 127					12/21/15 16:54	1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		0.19	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Acenaphthene	ND *		0.095	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Acenaphthylene	ND *		0.076	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Anthracene	ND *		0.038	0.0095	ug/L		12/18/15 08:46	12/20/15 10:47	1
Benzo[a]anthracene	ND		0.057	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Benzo[a]pyrene	ND *		0.038	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Benzo[b]fluoranthene	ND		0.076	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Benzo[g,h,i]perylene	ND		0.057	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Benzo[k]fluoranthene	ND		0.057	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Bis(2-ethylhexyl) phthalate	ND		2.8	1.1	ug/L		12/18/15 08:46	12/20/15 10:47	1
Butyl benzyl phthalate	ND *		0.57	0.19	ug/L		12/18/15 08:46	12/20/15 10:47	1
Chrysene	ND		0.038	0.012	ug/L		12/18/15 08:46	12/20/15 10:47	1
Dibenz(a,h)anthracene	ND		0.057	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
<b>Diethyl phthalate</b>	<b>0.17</b>	<b>J B</b>	0.38	0.095	ug/L		12/18/15 08:46	12/20/15 10:47	1
Dimethyl phthalate	ND		0.38	0.095	ug/L		12/18/15 08:46	12/20/15 10:47	1
Di-n-butyl phthalate	ND		0.38	0.12	ug/L		12/18/15 08:46	12/20/15 10:47	1
Di-n-octyl phthalate	ND		0.38	0.17	ug/L		12/18/15 08:46	12/20/15 10:47	1
Fluoranthene	ND		0.047	0.012	ug/L		12/18/15 08:46	12/20/15 10:47	1
Fluorene	ND		0.057	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Indeno[1,2,3-cd]pyrene	ND		0.057	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Naphthalene	ND		0.38	0.095	ug/L		12/18/15 08:46	12/20/15 10:47	1
Phenanthrene	ND		0.076	0.019	ug/L		12/18/15 08:46	12/20/15 10:47	1
Pyrene	ND		0.057	0.012	ug/L		12/18/15 08:46	12/20/15 10:47	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: RB-1-151215****Lab Sample ID: 580-55916-6**

Date Collected: 12/15/15 15:55

Matrix: Water

Date Received: 12/16/15 10:15

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	125		64 - 150	12/18/15 08:46	12/20/15 10:47	1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - RE**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND	H	0.20	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Acenaphthene	ND	H	0.10	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Acenaphthylene	ND	H	0.081	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Anthracene	ND	H	0.040	0.010	ug/L		12/29/15 15:01	12/30/15 23:11	1
Benzo[a]anthracene	ND	H	0.061	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Benzo[a]pyrene	ND	H	0.040	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Benzo[b]fluoranthene	ND	H	0.081	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Benzo[g,h,i]perylene	ND	H	0.061	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Benzo[k]fluoranthene	ND	H	0.061	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Bis(2-ethylhexyl) phthalate	ND	H *	3.0	1.2	ug/L		12/29/15 15:01	12/30/15 23:11	1
<b>Butyl benzyl phthalate</b>	<b>0.20</b>	<b>J H</b>	0.61	0.20	ug/L		12/29/15 15:01	12/30/15 23:11	1
Chrysene	ND	H	0.040	0.013	ug/L		12/29/15 15:01	12/30/15 23:11	1
Dibenz(a,h)anthracene	ND	H	0.061	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
<b>Diethyl phthalate</b>	<b>0.11</b>	<b>J H</b>	0.40	0.10	ug/L		12/29/15 15:01	12/30/15 23:11	1
Dimethyl phthalate	ND	H	0.40	0.10	ug/L		12/29/15 15:01	12/30/15 23:11	1
<b>Di-n-butyl phthalate</b>	<b>0.14</b>	<b>J H</b>	0.40	0.13	ug/L		12/29/15 15:01	12/30/15 23:11	1
Di-n-octyl phthalate	ND	H	0.40	0.18	ug/L		12/29/15 15:01	12/30/15 23:11	1
Fluoranthene	ND	H	0.051	0.013	ug/L		12/29/15 15:01	12/30/15 23:11	1
Fluorene	ND	H	0.061	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Indeno[1,2,3-cd]pyrene	ND	H	0.061	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Naphthalene	ND	H	0.40	0.10	ug/L		12/29/15 15:01	12/30/15 23:11	1
Phenanthrene	ND	H	0.081	0.020	ug/L		12/29/15 15:01	12/30/15 23:11	1
Pyrene	ND	H	0.061	0.013	ug/L		12/29/15 15:01	12/30/15 23:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	123		64 - 150	12/29/15 15:01	12/30/15 23:11	1

**Method: 8081A - Organochlorine Pesticides (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		0.095	0.019	ug/L		12/21/15 10:34	12/22/15 20:14	1
4,4'-DDD	ND		0.0047	0.0038	ug/L		12/21/15 10:34	12/22/15 20:14	1
4,4'-DDE	ND		0.0047	0.0028	ug/L		12/21/15 10:34	12/22/15 20:14	1
2,4'-DDE	ND		0.095	0.019	ug/L		12/21/15 10:34	12/22/15 20:14	1
4,4'-DDT	ND		0.0095	0.0038	ug/L		12/21/15 10:34	12/22/15 20:14	1
Aldrin	ND		0.0047	0.0014	ug/L		12/21/15 10:34	12/22/15 20:14	1
2,4'-DDT	ND		0.095	0.019	ug/L		12/21/15 10:34	12/22/15 20:14	1
Chlordane (technical)	ND		0.095	0.076	ug/L		12/21/15 10:34	12/22/15 20:14	1
Dieldrin	ND		0.0047	0.0019	ug/L		12/21/15 10:34	12/22/15 20:14	1
Endosulfan, alpha	ND		0.0047	0.0028	ug/L		12/21/15 10:34	12/22/15 20:14	1
Endosulfan, beta	ND		0.0047	0.0019	ug/L		12/21/15 10:34	12/22/15 20:14	1
Endosulfan sulfate	ND		0.0095	0.0028	ug/L		12/21/15 10:34	12/22/15 20:14	1
Endrin	ND		0.0047	0.0019	ug/L		12/21/15 10:34	12/22/15 20:14	1
Endrin aldehyde	ND		0.0095	0.0019	ug/L		12/21/15 10:34	12/22/15 20:14	1
Endrin ketone	ND		0.0095	0.0066	ug/L		12/21/15 10:34	12/22/15 20:14	1
Heptachlor	ND		0.0095	0.0028	ug/L		12/21/15 10:34	12/22/15 20:14	1
Heptachlor epoxide	ND		0.0047	0.0024	ug/L		12/21/15 10:34	12/22/15 20:14	1
Methoxychlor	ND		0.0047	0.0033	ug/L		12/21/15 10:34	12/22/15 20:14	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: RB-1-151215**

**Lab Sample ID: 580-55916-6**

**Matrix: Water**

Date Collected: 12/15/15 15:55

Date Received: 12/16/15 10:15

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		0.47	0.24	ug/L		12/21/15 10:34	12/22/15 20:14	1
<b>Surrogate</b>									
DCB Decachlorobiphenyl (Sur)	34		18 - 134				12/21/15 10:34	12/22/15 20:14	1
Tetrachloro-m-xylene	58		10 - 150				12/21/15 10:34	12/22/15 20:14	1

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.24	0.0081	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1221	ND		0.24	0.014	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1232	ND		0.24	0.0071	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1242	ND		0.24	0.0066	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1248	ND		0.24	0.0066	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1254	ND		0.24	0.0071	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1260	ND		0.24	0.018	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1262	ND		0.24	0.0062	ug/L		12/21/15 15:13	12/23/15 02:01	1
PCB-1268	ND		0.24	0.0066	ug/L		12/21/15 15:13	12/23/15 02:01	1
Polychlorinated biphenyls, Total	ND		0.24	0.018	ug/L		12/21/15 15:13	12/23/15 02:01	1
<b>Surrogate</b>									
DCB Decachlorobiphenyl	65		38 - 121				12/21/15 15:13	12/23/15 02:01	1
Tetrachloro-m-xylene	71		26 - 124				12/21/15 15:13	12/23/15 02:01	1

## Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20	0.10	ug/L		12/23/15 08:32	12/23/15 16:23	1
Cadmium	ND		0.10	0.050	ug/L		12/23/15 08:32	12/23/15 16:23	1
Chromium	ND		0.50	0.25	ug/L		12/23/15 08:32	12/23/15 16:23	1
Copper	ND		0.50	0.25	ug/L		12/23/15 08:32	12/23/15 16:23	1
<b>Lead</b>	<b>0.051 J</b>		0.10	0.050	ug/L		12/23/15 08:32	12/23/15 16:23	1
Manganese	ND		0.50	0.25	ug/L		12/31/15 10:10	12/31/15 18:48	1
Nickel	ND		0.30	0.15	ug/L		12/23/15 08:32	12/23/15 16:23	1
Zinc	ND		5.0	2.0	ug/L		12/23/15 08:32	12/23/15 16:23	1

## Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.041	ug/L		12/22/15 09:22	12/22/15 12:48	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB3CD-S-1581215**

**Lab Sample ID: 580-55916-7**

Date Collected: 12/15/15 16:45

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 53.3

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	3.6	0.55	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
Benzene	ND		3.6	0.55	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>Tetrachloroethene</b>	<b>1.2</b>	<b>J</b>	3.6	0.73	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>1,1-Dichloroethane</b>	<b>1.8</b>		1.8	0.35	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>1,2-Dichloroethane</b>	<b>0.35</b>	<b>J</b>	1.8	0.27	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
Methylene Chloride	ND		27	0.44	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>Toluene</b>	<b>2.9</b>	<b>J *</b>	3.6	0.55	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>o-Xylene</b>	<b>1.4</b>	<b>J *</b>	3.6	0.47	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
Styrene	ND	*	3.6	0.36	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
trans-1,2-Dichloroethene	ND	*	3.6	0.73	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>Trichloroethene</b>	<b>0.63</b>	<b>J *</b>	3.6	0.55	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
Ethylbenzene	ND	*	3.6	0.73	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>cis-Dichloroethylene</b>	<b>0.79</b>	<b>J</b>	3.6	0.55	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
Chloroform	ND	*	3.6	0.55	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>m-Xylene &amp; p-Xylene</b>	<b>2.3</b>	<b>J *</b>	3.6	0.36	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>Xylenes, Total</b>	<b>3.7</b>		3.6	0.47	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:03	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	117		71 - 136				12/17/15 10:45	12/29/15 20:03	1
4-Bromofluorobenzene (Surr)	113		70 - 120				12/17/15 10:45	12/29/15 20:03	1
Dibromofluoromethane (Surr)	110		75 - 132				12/17/15 10:45	12/29/15 20:03	1
Toluene-d8 (Surr)	94		80 - 120				12/17/15 10:45	12/29/15 20:03	1
Trifluorotoluene (Surr)	95		65 - 140				12/17/15 10:45	12/29/15 20:03	1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2-Methylnaphthalene</b>	<b>31</b>	<b>J</b>	36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
Acenaphthene	ND		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
Acenaphthylene	ND		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Anthracene</b>	<b>15</b>	<b>J</b>	36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Benzo[a]anthracene</b>	<b>55</b>		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Butyl benzyl phthalate</b>	<b>590</b>	<b>B</b>	360	91	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Chrysene</b>	<b>200</b>		45	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Diethyl phthalate</b>	<b>30</b>	<b>J B</b>	360	27	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Dimethyl phthalate</b>	<b>800</b>		180	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Di-n-butyl phthalate</b>	<b>440</b>	<b>J</b>	910	91	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Fluoranthene</b>	<b>300</b>		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
Fluorene	ND		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Naphthalene</b>	<b>24</b>	<b>J</b>	36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Phenanthrene</b>	<b>130</b>		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Pyrene</b>	<b>420</b>		36	9.1	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:30	10
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Terphenyl-d14 (Surr)	140		42 - 151				12/23/15 08:49	12/31/15 02:30	10

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Benzo[a]pyrene</b>	<b>130</b>		54	9.1	ug/Kg	⊗	12/23/15 08:49	01/05/16 00:34	10
<b>Benzo[b]fluoranthene</b>	<b>280</b>		36	9.1	ug/Kg	⊗	12/23/15 08:49	01/05/16 00:34	10
<b>Benzo[g,h,i]perylene</b>	<b>120</b>		45	9.1	ug/Kg	⊗	12/23/15 08:49	01/05/16 00:34	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB3CD-S-1581215****Lab Sample ID: 580-55916-7**

Date Collected: 12/15/15 16:45

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 53.3

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	83		45	9.1	ug/Kg	☀	12/23/15 08:49	01/05/16 00:34	10
Dibenzo(a,h)anthracene	31	J	72	9.1	ug/Kg	☀	12/23/15 08:49	01/05/16 00:34	10
Di-n-octyl phthalate	2000		910	9.1	ug/Kg	☀	12/23/15 08:49	01/05/16 00:34	10
Indeno[1,2,3-cd]pyrene	67	J	72	9.1	ug/Kg	☀	12/23/15 08:49	01/05/16 00:34	10

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL2**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	17000		11000	910	ug/Kg	☀	12/23/15 08:49	01/05/16 01:00	100

**Method: 8081B - Organochlorine Pesticides (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	1.5		0.90	0.11	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
alpha-Chlordane	4.9		0.90	0.12	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Chlordane (technical)	110		9.0	1.3	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
2,4'-DDD	ND		1.8	0.27	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
4,4'-DDD	3.4	B	1.8	0.067	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
2,4'-DDE	ND		1.8	0.27	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
4,4'-DDE	8.7	B	1.8	0.13	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
2,4'-DDT	1.2	J	1.8	0.14	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
4,4'-DDT	22		1.8	0.14	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Endosulfan, alpha	ND		0.90	0.092	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Endosulfan, beta	0.55	J	1.8	0.096	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Endosulfan sulfate	1.4	J	1.8	0.041	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Endrin	1.6	J	1.8	0.085	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Endrin aldehyde	14	*	1.8	0.18	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Endrin ketone	24		1.8	0.11	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
gamma-Chlordane	7.1		0.90	0.12	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Heptachlor	ND		1.8	0.14	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Heptachlor epoxide	8.3		0.90	0.035	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Methoxychlor	5.5	J	9.0	0.12	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Toxaphene	ND		90	7.0	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5
Dieldrin	1.1	J	1.8	0.11	ug/Kg	☀	12/18/15 11:04	01/20/16 13:02	5

**Surrogate**

	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	231	X	60 - 128	12/18/15 11:04	01/20/16 13:02	5
Tetrachloro-m-xylene	87		35 - 129	12/18/15 11:04	01/20/16 13:02	5

**Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		1.8	0.090	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1221	ND		2.0	0.61	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1232	ND		2.0	0.40	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1242	ND		1.8	0.38	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1248	ND		2.0	0.29	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1254	ND		1.8	0.16	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1260	ND		1.8	0.23	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1262	ND		1.8	0.34	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
PCB-1268	ND		1.8	0.38	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1
Polychlorinated biphenyls, Total	ND		2.0	0.61	ug/Kg	☀	12/18/15 11:04	01/19/16 18:58	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB3CD-S-1581215**

**Lab Sample ID: 580-55916-7**

Date Collected: 12/15/15 16:45

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 53.3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	99		50 - 140	12/18/15 11:04	01/19/16 18:58	1
Tetrachloro-m-xylene	89		45 - 135	12/18/15 11:04	01/19/16 18:58	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2700		880	320	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Cadmium	1100		350	33	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Chromium	70000		880	110	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Copper	92000		700	170	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Lead	40000		880	84	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Manganese	340000		1800	300	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Nickel	47000		880	140	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10
Zinc	500000		8800	2000	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:44	10

## Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	79		34	10	ug/Kg	⊗	12/22/15 12:25	12/22/15 15:32	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	53		0.10		%			12/21/15 10:45	1
Percent Moisture	47		0.10		%			12/21/15 10:45	1

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: TRENCH1-S-151215**

**Lab Sample ID: 580-55916-8**

Date Collected: 12/15/15 17:15

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 49.1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	*	4.0	0.61	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Benzene	ND		4.0	0.61	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Tetrachloroethene	ND		4.0	0.81	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
1,1-Dichloroethane	ND		2.0	0.38	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
<b>1,2-Dichloroethane</b>	<b>0.38</b>	<b>J</b>	2.0	0.30	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Methylene Chloride	ND		30	0.48	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
<b>Toluene</b>	<b>0.62</b>	<b>J *</b>	4.0	0.61	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
o-Xylene	ND	*	4.0	0.52	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
<b>Styrene</b>	<b>0.42</b>	<b>J *</b>	4.0	0.40	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
trans-1,2-Dichloroethene	ND	*	4.0	0.81	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Trichloroethene	ND	*	4.0	0.61	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Ethylbenzene	ND	*	4.0	0.81	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
cis-Dichloroethylene	ND		4.0	0.61	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Chloroform	ND	*	4.0	0.61	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
<b>m-Xylene &amp; p-Xylene</b>	<b>0.42</b>	<b>J *</b>	4.0	0.40	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
Xylenes, Total	ND		4.0	0.52	ug/Kg	⊗	12/17/15 10:45	12/29/15 20:31	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	121		71 - 136				12/17/15 10:45	12/29/15 20:31	1
4-Bromofluorobenzene (Surr)	111		70 - 120				12/17/15 10:45	12/29/15 20:31	1
Dibromofluoromethane (Surr)	110		75 - 132				12/17/15 10:45	12/29/15 20:31	1
Toluene-d8 (Surr)	95		80 - 120				12/17/15 10:45	12/29/15 20:31	1
Trifluorotoluene (Surr)	94		65 - 140				12/17/15 10:45	12/29/15 20:31	1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2-Methylnaphthalene</b>	<b>32</b>	<b>J</b>	40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
Acenaphthene	ND		40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Acenaphthylene</b>	<b>13</b>	<b>J</b>	40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Anthracene</b>	<b>19</b>	<b>J</b>	40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Benzo[a]anthracene</b>	<b>62</b>		40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Butyl benzyl phthalate</b>	<b>650</b>	<b>B</b>	400	100	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Chrysene</b>	<b>140</b>		50	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
Diethyl phthalate	ND		400	30	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Dimethyl phthalate</b>	<b>810</b>		200	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Di-n-butyl phthalate</b>	<b>430</b>	<b>J</b>	1000	100	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Fluoranthene</b>	<b>390</b>		40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Fluorene</b>	<b>13</b>	<b>J</b>	40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Naphthalene</b>	<b>34</b>	<b>J</b>	40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Phenanthrene</b>	<b>200</b>		40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Pyrene</b>	<b>600</b>		40	10	ug/Kg	⊗	12/23/15 08:49	12/31/15 02:55	10
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Terphenyl-d14 (Surr)	140		42 - 151				12/23/15 08:49	12/31/15 02:55	10

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Benzo[a]pyrene</b>	<b>100</b>		60	10	ug/Kg	⊗	12/23/15 08:49	01/05/16 01:25	10
<b>Benzo[b]fluoranthene</b>	<b>240</b>		40	10	ug/Kg	⊗	12/23/15 08:49	01/05/16 01:25	10
<b>Benzo[g,h,i]perylene</b>	<b>130</b>		50	10	ug/Kg	⊗	12/23/15 08:49	01/05/16 01:25	10

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: TRENCH1-S-151215****Lab Sample ID: 580-55916-8**

Date Collected: 12/15/15 17:15

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 49.1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	190		50	10	ug/Kg	☀	12/23/15 08:49	01/05/16 01:25	10
Dibenz(a,h)anthracene	27	J	80	10	ug/Kg	☀	12/23/15 08:49	01/05/16 01:25	10
Di-n-octyl phthalate	5900		1000	10	ug/Kg	☀	12/23/15 08:49	01/05/16 01:25	10
Indeno[1,2,3-cd]pyrene	57	J	80	10	ug/Kg	☀	12/23/15 08:49	01/05/16 01:25	10

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL2**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	40000		12000	1000	ug/Kg	☀	12/23/15 08:49	01/05/16 01:50	100

**Method: 8081B - Organochlorine Pesticides (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.58	J	4.0	0.47	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
alpha-Chlordane	17		4.0	0.54	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Chlordane (technical)	110		40	5.6	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
2,4'-DDD	14		8.0	1.2	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
4,4'-DDD	18	B	8.0	0.30	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
2,4'-DDE	3.8	J	8.0	1.2	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
4,4'-DDE	29	B	8.0	0.56	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
2,4'-DDT	ND		8.0	0.64	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
4,4'-DDT	25		8.0	0.61	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Endosulfan, alpha	ND		4.0	0.41	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Endosulfan, beta	ND		8.0	0.43	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Endosulfan sulfate	ND		8.0	0.18	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Endrin	5.4	J	8.0	0.38	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Endrin aldehyde	3.6	J *	8.0	0.79	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Endrin ketone	280		8.0	0.48	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
gamma-Chlordane	11		4.0	0.54	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Heptachlor	ND		8.0	0.60	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Heptachlor epoxide	ND		4.0	0.16	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Methoxychlor	25	J	40	0.51	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Toxaphene	ND		400	31	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20
Dieldrin	6.3	J	8.0	0.47	ug/Kg	☀	12/18/15 11:04	01/20/16 13:18	20

Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	395	X	60 - 128		12/18/15 11:04	01/20/16 13:18	20
Tetrachloro-m-xylene	83		35 - 129		12/18/15 11:04	01/20/16 13:18	20

**Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.0	0.10	ug/Kg	☀	12/18/15 11:04	01/15/16 08:51	1
PCB-1221	ND		2.2	0.68	ug/Kg	☀	12/18/15 11:04	01/15/16 08:51	1
PCB-1232	ND		2.2	0.44	ug/Kg	☀	12/18/15 11:04	01/15/16 08:51	1
PCB-1242	ND		2.0	0.42	ug/Kg	☀	12/18/15 11:04	01/15/16 08:51	1
PCB-1248	ND		2.2	0.32	ug/Kg	☀	12/18/15 11:04	01/15/16 08:51	1
PCB-1254	ND		40	3.6	ug/Kg	☀	12/18/15 11:04	01/19/16 19:15	20
PCB-1260	ND		40	5.2	ug/Kg	☀	12/18/15 11:04	01/19/16 19:15	20
PCB-1262	ND		40	7.6	ug/Kg	☀	12/18/15 11:04	01/19/16 19:15	20
<b>PCB-1268</b>	<b>1200</b>		40	8.4	ug/Kg	☀	12/18/15 11:04	01/19/16 19:15	20
<b>Polychlorinated biphenyls, Total</b>	<b>1200</b>		44	14	ug/Kg	☀	12/18/15 11:04	01/19/16 19:15	20

TestAmerica Seattle

# Client Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: TRENCH1-S-151215**

**Lab Sample ID: 580-55916-8**

Date Collected: 12/15/15 17:15

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 49.1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	303	X	50 - 140	12/18/15 11:04	01/15/16 08:51	1
DCB Decachlorobiphenyl	320	X	50 - 140	12/18/15 11:04	01/19/16 19:15	20
Tetrachloro-m-xylene	67		45 - 135	12/18/15 11:04	01/15/16 08:51	1
Tetrachloro-m-xylene	64		45 - 135	12/18/15 11:04	01/19/16 19:15	20

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	24000		880	320	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Cadmium	1800		350	33	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Chromium	270000		880	110	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Copper	160000		700	170	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Lead	210000		880	84	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Manganese	520000		1800	300	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Nickel	130000		880	140	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10
Zinc	2700000		8800	2000	ug/Kg	⊗	12/18/15 13:06	12/19/15 03:49	10

## Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	130		40	12	ug/Kg	⊗	12/22/15 12:25	12/22/15 15:35	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	49		0.10		%			12/21/15 10:45	1
Percent Moisture	51		0.10		%			12/21/15 10:45	1

TestAmerica Seattle



## QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

### Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-208241/5

Matrix: Water

Analysis Batch: 208241

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Surrogate	LCS	LCS	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	113				70 - 128
4-Bromofluorobenzene (Surr)	105				75 - 120
Dibromofluoromethane (Surr)	110				85 - 115
Toluene-d8 (Surr)	100				75 - 125
Trifluorotoluene (Surr)	94				80 - 127

Lab Sample ID: LCSD 580-208241/6

Matrix: Water

Analysis Batch: 208241

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
1,1,1-Trichloroethane	5.02	5.64		ug/L	112	80 - 140		2	20
Benzene	5.02	4.98		ug/L	99	80 - 120		0	20
Tetrachloroethene	5.01	4.52		ug/L	90	40 - 180		6	20
1,1-Dichloroethane	5.00	5.18		ug/L	104	75 - 135		2	20
1,2-Dichloroethane	5.00	5.77		ug/L	115	80 - 140		0	20
Methylene Chloride	5.02	4.80		ug/L	96	60 - 145		0	20
Toluene	5.00	4.79		ug/L	96	80 - 120		2	20
o-Xylene	5.01	5.48		ug/L	109	80 - 120		0	20
Styrene	5.01	4.97		ug/L	99	75 - 130		2	20
trans-1,2-Dichloroethene	5.01	4.55		ug/L	91	80 - 140		3	20
Trichloroethene	5.01	5.08		ug/L	101	80 - 130		1	20
Ethylbenzene	5.02	4.90		ug/L	98	80 - 125		3	20
cis-Dichloroethylene	5.01	5.06		ug/L	101	80 - 130		2	20
Chloroform	5.00	5.42		ug/L	108	80 - 130		6	20
m-Xylene & p-Xylene	5.01	5.10		ug/L	102	80 - 130		1	20
Vinyl chloride		5.03	4.24	ug/L		84	65 - 140	2	20
Xylenes, Total		10.0	10.6	ug/L		106	80 - 130	1	20

Surrogate	LCSD	LCSD	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	113				70 - 128
4-Bromofluorobenzene (Surr)	105				75 - 120
Dibromofluoromethane (Surr)	108				85 - 115
Toluene-d8 (Surr)	98				75 - 125
Trifluorotoluene (Surr)	93				80 - 127

### Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-208712/1-A

Client Sample ID: Method Blank

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 208714

Prep Batch: 208712

MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane		ND		2.0	0.30	ug/Kg		12/29/15 12:37	12/29/15 12:44	1
Benzene		ND		2.0	0.30	ug/Kg		12/29/15 12:37	12/29/15 12:44	1
Tetrachloroethene		ND		2.0	0.40	ug/Kg		12/29/15 12:37	12/29/15 12:44	1
1,1-Dichloroethane		ND		1.0	0.19	ug/Kg		12/29/15 12:37	12/29/15 12:44	1

TestAmerica Seattle



# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-208712/2-A

Matrix: Solid

Analysis Batch: 208714

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 208712

Surrogate	LCS	LCS	
	%Recovery	Qualifier	Limits
Trifluorotoluene (Surr)	95		65 - 140

Lab Sample ID: LCSD 580-208712/3-A

Matrix: Solid

Analysis Batch: 208714

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 208712

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Added	Result	Qualifier				Limits	RPD	Limit
1,1,1-Trichloroethane	40.1	29.4	*	ug/Kg	73	63 - 135	22	20	
Benzene	40.1	29.6	ug/Kg	74	70 - 128	16	19		
Tetrachloroethylene	40.1	35.9	ug/Kg	89	56 - 155	20	27		
1,1-Dichloroethane	40.0	29.5	ug/Kg	74	70 - 128	17	21		
1,2-Dichloroethane	40.0	41.6	ug/Kg	104	71 - 128	12	18		
Methylene Chloride	40.2	31.8	ug/Kg	79	57 - 146	16	21		
Toluene	40.0	28.0	*	ug/Kg	70	75 - 126	17	19	
o-Xylene	40.1	27.9	*	ug/Kg	70	77 - 127	16	22	
Styrene	40.1	28.9	*	ug/Kg	72	79 - 127	15	21	
trans-1,2-Dichloroethylene	40.1	29.0	*	ug/Kg	72	76 - 131	20	18	
Trichloroethylene	40.1	34.5	*	ug/Kg	86	83 - 124	18	17	
Ethylbenzene	40.2	27.0	*	ug/Kg	67	78 - 126	18	23	
cis-Dichloroethylene	40.1	30.4	ug/Kg	76	70 - 130	17	19		
Chloroform	40.0	32.8	*	ug/Kg	82	78 - 125	18	17	
m-Xylene & p-Xylene	40.1	27.9	*	ug/Kg	70	78 - 126	17	23	
Xylenes, Total	80.2	55.8	ug/Kg	70	70 - 130	17	30		

Surrogate	LCSD	LCSD	
	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	115		71 - 136
4-Bromofluorobenzene (Surr)	113		70 - 120
Dibromofluoromethane (Surr)	109		75 - 132
Toluene-d8 (Surr)	89		80 - 120
Trifluorotoluene (Surr)	96		65 - 140

Lab Sample ID: 580-55916-5 MS

Matrix: Solid

Analysis Batch: 208714

Client Sample ID: CB5A-S-151215

Prep Type: Total/NA

Prep Batch: 208712

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
1,1,1-Trichloroethane	ND	*	109	112		ug/Kg	⊗	103	70 - 135
Benzene	ND		109	110		ug/Kg	⊗	101	75 - 125
Tetrachloroethylene	ND		109	149		ug/Kg	⊗	137	65 - 140
1,1-Dichloroethane	ND		108	115		ug/Kg	⊗	106	75 - 125
1,2-Dichloroethane	0.52	J	108	140		ug/Kg	⊗	128	70 - 135
Methylene Chloride	ND		109	109		ug/Kg	⊗	100	55 - 140
Toluene	6.2	*	108	126		ug/Kg	⊗	111	70 - 125
o-Xylene	ND	*	108	106		ug/Kg	⊗	97	75 - 125
Styrene	ND	*	108	105		ug/Kg	⊗	96	75 - 125
trans-1,2-Dichloroethylene	ND	*	109	114		ug/Kg	⊗	105	65 - 135
Trichloroethylene	ND	*	109	122		ug/Kg	⊗	113	75 - 125
Ethylbenzene	ND	*	109	105		ug/Kg	⊗	97	75 - 125

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: 580-55916-5 MS**

**Matrix: Solid**

**Analysis Batch: 208714**

**Client Sample ID: CB5A-S-151215**

**Prep Type: Total/NA**

**Prep Batch: 208712**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec.	Limits	%Rec.
	Result	Qualifier	Added	Result	Qualifier					
cis-Dichloroethylene	ND		108	114		ug/Kg	⊗	105	65 - 125	
Chloroform	ND *		108	124		ug/Kg	⊗	114	70 - 125	
m-Xylene & p-Xylene	ND *		109	107		ug/Kg	⊗	99	80 - 125	
Xylenes, Total	ND		217	213		ug/Kg	⊗	98	70 - 130	
<b>Surrogate</b>										
1,2-Dichloroethane-d4 (Surr)	119	%Recovery	Qualifier	<b>MS</b>		<b>MS</b>				
4-Bromofluorobenzene (Surr)	98			71 - 136		71 - 136				
Dibromofluoromethane (Surr)	113			70 - 120		75 - 132				
Toluene-d8 (Surr)	98			80 - 120		80 - 120				
Trifluorotoluene (Surr)	83			65 - 140		65 - 140				

**Lab Sample ID: 580-55916-5 MSD**

**Matrix: Solid**

**Analysis Batch: 208714**

**Client Sample ID: CB5A-S-151215**

**Prep Type: Total/NA**

**Prep Batch: 208712**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
1,1,1-Trichloroethane	ND	*	113	115		ug/Kg	⊗	101	70 - 135	3	30
Benzene	ND		113	111		ug/Kg	⊗	98	75 - 125	1	30
Tetrachloroethene	ND		113	124		ug/Kg	⊗	109	65 - 140	19	30
1,1-Dichloroethane	ND		113	117		ug/Kg	⊗	104	75 - 125	2	30
1,2-Dichloroethane	0.52	J	113	144		ug/Kg	⊗	126	70 - 135	3	30
Methylene Chloride	ND		114	110		ug/Kg	⊗	97	55 - 140	1	30
Toluene	6.2	*	113	125		ug/Kg	⊗	105	70 - 125	1	30
o-Xylene	ND *		113	96.7		ug/Kg	⊗	85	75 - 125	9	30
Styrene	ND *		113	98.0		ug/Kg	⊗	87	75 - 125	6	30
trans-1,2-Dichloroethene	ND *		113	113		ug/Kg	⊗	100	65 - 135	0	30
Trichloroethene	ND *		113	120		ug/Kg	⊗	106	75 - 125	2	30
Ethylbenzene	ND *		113	95.5		ug/Kg	⊗	84	75 - 125	10	30
cis-Dichloroethylene	ND		113	117		ug/Kg	⊗	103	65 - 125	2	30
Chloroform	ND *		113	128		ug/Kg	⊗	113	70 - 125	3	30
m-Xylene & p-Xylene	ND *		113	96.3		ug/Kg	⊗	85	80 - 125	11	30
Xylenes, Total	ND		227	193		ug/Kg	⊗	85	70 - 130	10	30
<b>Surrogate</b>											
1,2-Dichloroethane-d4 (Surr)	117	%Recovery	Qualifier	<b>MSD</b>		<b>MSD</b>				<b>MSD</b>	
4-Bromofluorobenzene (Surr)	96			71 - 136		71 - 136				70 - 120	
Dibromofluoromethane (Surr)	114			75 - 132		75 - 132				80 - 120	
Toluene-d8 (Surr)	99			65 - 140		65 - 140				65 - 135	
Trifluorotoluene (Surr)	79			65 - 140		65 - 140				65 - 135	

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-208145/1-A

Matrix: Water

Analysis Batch: 208231

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 208145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		0.20	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Acenaphthene	ND		0.10	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Acenaphthylene	ND		0.080	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Anthracene	ND		0.040	0.010	ug/L		12/18/15 08:46	12/20/15 04:01	1
Benzo[a]anthracene	ND		0.060	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Benzo[a]pyrene	ND		0.040	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Benzo[b]fluoranthene	ND		0.080	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Benzo[g,h,i]perylene	ND		0.060	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Benzo[k]fluoranthene	ND		0.060	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Bis(2-ethylhexyl) phthalate	ND		3.0	1.2	ug/L		12/18/15 08:46	12/20/15 04:01	1
Butyl benzyl phthalate	ND		0.60	0.20	ug/L		12/18/15 08:46	12/20/15 04:01	1
Chrysene	ND		0.040	0.013	ug/L		12/18/15 08:46	12/20/15 04:01	1
Dibenz(a,h)anthracene	ND		0.060	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Diethyl phthalate	0.197	J	0.40	0.10	ug/L		12/18/15 08:46	12/20/15 04:01	1
Dimethyl phthalate	ND		0.40	0.10	ug/L		12/18/15 08:46	12/20/15 04:01	1
Di-n-butyl phthalate	ND		0.40	0.13	ug/L		12/18/15 08:46	12/20/15 04:01	1
Di-n-octyl phthalate	ND		0.40	0.18	ug/L		12/18/15 08:46	12/20/15 04:01	1
Fluoranthene	ND		0.050	0.013	ug/L		12/18/15 08:46	12/20/15 04:01	1
Fluorene	ND		0.060	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Indeno[1,2,3-cd]pyrene	ND		0.060	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Naphthalene	ND		0.40	0.10	ug/L		12/18/15 08:46	12/20/15 04:01	1
Phenanthrene	ND		0.080	0.020	ug/L		12/18/15 08:46	12/20/15 04:01	1
Pyrene	ND		0.060	0.013	ug/L		12/18/15 08:46	12/20/15 04:01	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surf)	109		64 - 150	12/18/15 08:46	12/20/15 04:01	1

Lab Sample ID: LCS 580-208145/2-A

Matrix: Water

Analysis Batch: 208231

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 208145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2-Methylnaphthalene	2.00	1.49		ug/L		74	56 - 125
Acenaphthene	2.00	1.43		ug/L		71	63 - 125
Acenaphthylene	2.00	1.13	*	ug/L		57	62 - 125
Anthracene	2.00	0.730	*	ug/L		36	50 - 125
Benzo[a]anthracene	2.00	1.42		ug/L		71	65 - 125
Benzo[a]pyrene	2.00	0.664	*	ug/L		33	45 - 125
Benzo[b]fluoranthene	2.00	1.97		ug/L		99	70 - 129
Benzo[g,h,i]perylene	2.00	1.73		ug/L		87	65 - 153
Benzo[k]fluoranthene	2.00	1.80		ug/L		90	70 - 123
Bis(2-ethylhexyl) phthalate	2.00	1.96	J	ug/L		98	70 - 185
Butyl benzyl phthalate	2.00	1.92		ug/L		96	60 - 167
Chrysene	2.00	1.81		ug/L		91	70 - 125
Dibenz(a,h)anthracene	2.00	1.47		ug/L		74	69 - 154
Diethyl phthalate	2.00	1.91		ug/L		95	60 - 150
Dimethyl phthalate	2.00	1.86		ug/L		93	65 - 155
Di-n-butyl phthalate	2.00	2.01		ug/L		100	55 - 167

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-208145/2-A

Matrix: Water

Analysis Batch: 208231

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 208145

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits
	Added	Result	Qualifier				
Di-n-octyl phthalate	2.00	1.93		ug/L		96	55 - 150
Fluoranthene	2.00	1.93		ug/L		97	70 - 145
Fluorene	2.00	1.70		ug/L		85	69 - 125
Indeno[1,2,3-cd]pyrene	2.00	1.56		ug/L		78	70 - 136
Naphthalene	2.00	1.50		ug/L		75	56 - 125
Phenanthrene	2.00	1.67		ug/L		84	70 - 125
Pyrene	2.00	1.73		ug/L		86	70 - 133
<b>Surrogate</b>		<b>LCS</b>	<b>LCS</b>				
<i>Terphenyl-d14 (Surr)</i>		105	%Recovery	Qualifier	<b>Limits</b>		
					64 - 150		

Lab Sample ID: LCSD 580-208145/3-A

Matrix: Water

Analysis Batch: 208231

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 208145

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
2-Methylnaphthalene	2.00	1.82		ug/L		91	56 - 125	20	20
Acenaphthene	2.00	1.77	*	ug/L		88	63 - 125	21	20
Acenaphthylene	2.00	1.17	*	ug/L		59	62 - 125	3	20
Anthracene	2.00	0.844	*	ug/L		42	50 - 125	15	20
Benzo[a]anthracene	2.00	1.60		ug/L		80	65 - 125	12	20
Benzo[a]pyrene	2.00	0.700	*	ug/L		35	45 - 125	5	20
Benzo[b]fluoranthene	2.00	2.32		ug/L		116	70 - 129	16	20
Benzo[g,h,i]perylene	2.00	1.93		ug/L		96	65 - 153	11	20
Benzo[k]fluoranthene	2.00	1.89		ug/L		94	70 - 123	4	20
Bis(2-ethylhexyl) phthalate	2.00	2.26	J	ug/L		113	70 - 185	14	20
Butyl benzyl phthalate	2.00	2.38	*	ug/L		119	60 - 167	22	20
Chrysene	2.00	2.01		ug/L		101	70 - 125	11	20
Dibenz(a,h)anthracene	2.00	1.80		ug/L		90	69 - 154	20	20
Diethyl phthalate	2.00	2.20		ug/L		110	60 - 150	14	20
Dimethyl phthalate	2.00	2.21		ug/L		110	65 - 155	17	20
Di-n-butyl phthalate	2.00	2.34		ug/L		117	55 - 167	15	20
Di-n-octyl phthalate	2.00	2.21		ug/L		110	55 - 150	14	20
Fluoranthene	2.00	2.21		ug/L		111	70 - 145	13	20
Fluorene	2.00	2.01		ug/L		101	69 - 125	17	20
Indeno[1,2,3-cd]pyrene	2.00	1.87		ug/L		93	70 - 136	18	20
Naphthalene	2.00	1.80		ug/L		90	56 - 125	18	20
Phenanthrene	2.00	1.96		ug/L		98	70 - 125	16	20
Pyrene	2.00	2.05		ug/L		103	70 - 133	17	20
<b>Surrogate</b>		<b>LCSD</b>	<b>LCSD</b>						
<i>Terphenyl-d14 (Surr)</i>		121	%Recovery	Qualifier	<b>Limits</b>			64 - 150	

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-208490/1-A

Matrix: Solid

Analysis Batch: 208823

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 208490

Analyte	MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Acenaphthene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Acenaphthylene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Anthracene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Benzo[a]anthracene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Benzo[a]pyrene	ND				3.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Benzo[b]fluoranthene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Benzo[g,h,i]perylene	ND				2.5	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Benzo[k]fluoranthene	ND				2.5	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Bis(2-ethylhexyl) phthalate	ND				60	5.0	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Butyl benzyl phthalate	8.09	J			20	5.0	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Chrysene	ND				2.5	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Dibenz(a,h)anthracene	ND				4.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Diethyl phthalate	3.70	J			20	1.5	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Dimethyl phthalate	ND				10	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Di-n-butyl phthalate	ND				50	5.0	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Di-n-octyl phthalate	ND				50	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Fluoranthene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Fluorene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Indeno[1,2,3-cd]pyrene	ND				4.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Naphthalene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Phenanthrene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Pyrene	ND				2.0	0.50	ug/Kg		12/23/15 08:49	12/30/15 19:49	1
Surrogate	MB	MB	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)			101		42 - 151				12/23/15 08:49	12/30/15 19:49	1

Lab Sample ID: LCS 580-208490/2-A

Matrix: Solid

Analysis Batch: 208823

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 208490

Analyte	Spike	LCS		Unit	D	%Rec	Limits
	Added	Result	Qualifier				
2-Methylnaphthalene	100	79.0		ug/Kg		79	64 - 119
Acenaphthene	100	77.2		ug/Kg		77	68 - 116
Acenaphthylene	100	77.0		ug/Kg		77	68 - 120
Anthracene	100	87.0		ug/Kg		87	73 - 116
Benzo[a]anthracene	100	95.5		ug/Kg		96	76 - 119
Benzo[a]pyrene	100	89.7		ug/Kg		90	72 - 117
Benzo[b]fluoranthene	100	103		ug/Kg		103	63 - 132
Benzo[g,h,i]perylene	100	90.5		ug/Kg		90	55 - 139
Benzo[k]fluoranthene	100	85.0		ug/Kg		85	63 - 119
Bis(2-ethylhexyl) phthalate	100	119		ug/Kg		119	62 - 144
Butyl benzyl phthalate	100	112		ug/Kg		112	69 - 142
Chrysene	100	84.6		ug/Kg		85	75 - 114
Dibenz(a,h)anthracene	100	90.1		ug/Kg		90	56 - 134
Diethyl phthalate	100	89.0		ug/Kg		89	73 - 116
Dimethyl phthalate	100	94.7		ug/Kg		95	78 - 117
Di-n-butyl phthalate	100	107		ug/Kg		107	66 - 140

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 580-208490/2-A**

**Matrix: Solid**

**Analysis Batch: 208823**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 208490**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits
	Added	Result	Qualifier				
Di-n-octyl phthalate	100	112		ug/Kg		112	65 - 141
Fluoranthene	100	102		ug/Kg		102	73 - 125
Fluorene	100	86.5		ug/Kg		86	70 - 121
Indeno[1,2,3-cd]pyrene	100	93.5		ug/Kg		93	56 - 127
Naphthalene	100	77.3		ug/Kg		77	62 - 112
Phenanthrene	100	86.5		ug/Kg		87	73 - 106
Pyrene	100	92.9		ug/Kg		93	70 - 120
<b>Surrogate</b>		<b>LCS</b>	<b>LCS</b>				
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>				
<i>Terphenyl-d14 (Surr)</i>		109		42 - 151			

**Lab Sample ID: LCSD 580-208490/3-A**

**Matrix: Solid**

**Analysis Batch: 208823**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 208490**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
2-Methylnaphthalene	100	86.6		ug/Kg		87	64 - 119	9	27
Acenaphthene	100	81.0		ug/Kg		81	68 - 116	5	27
Acenaphthylene	100	84.4		ug/Kg		84	68 - 120	9	28
Anthracene	100	94.9		ug/Kg		95	73 - 116	9	27
Benzo[a]anthracene	100	100		ug/Kg		100	76 - 119	5	27
Benzo[a]pyrene	100	94.9		ug/Kg		95	72 - 117	6	30
Benzo[b]fluoranthene	100	110		ug/Kg		110	63 - 132	6	30
Benzo[g,h,i]perylene	100	106		ug/Kg		106	55 - 139	16	28
Benzo[k]fluoranthene	100	101		ug/Kg		101	63 - 119	17	30
Bis(2-ethylhexyl) phthalate	100	123		ug/Kg		123	62 - 144	4	30
Butyl benzyl phthalate	100	118		ug/Kg		118	69 - 142	5	30
Chrysene	100	101		ug/Kg		101	75 - 114	17	26
Dibenz(a,h)anthracene	100	97.3		ug/Kg		97	56 - 134	8	30
Diethyl phthalate	100	90.9		ug/Kg		91	73 - 116	2	26
Dimethyl phthalate	100	96.6		ug/Kg		97	78 - 117	2	30
Di-n-butyl phthalate	100	111		ug/Kg		111	66 - 140	3	30
Di-n-octyl phthalate	100	120		ug/Kg		120	65 - 141	7	30
Fluoranthene	100	107		ug/Kg		107	73 - 125	5	30
Fluorene	100	92.9		ug/Kg		93	70 - 121	7	30
Indeno[1,2,3-cd]pyrene	100	102		ug/Kg		102	56 - 127	8	29
Naphthalene	100	85.0		ug/Kg		85	62 - 112	10	26
Phenanthrene	100	92.6		ug/Kg		93	73 - 106	7	28
Pyrene	100	101		ug/Kg		101	70 - 120	8	30
<b>Surrogate</b>		<b>LCSD</b>	<b>LCSD</b>						
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>						
<i>Terphenyl-d14 (Surr)</i>		116		42 - 151					

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 580-55916-5 MS

Matrix: Solid

Analysis Batch: 208823

Client Sample ID: CB5A-S-151215

Prep Type: Total/NA

Prep Batch: 208490

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier	Added	Result	Qualifier					
2-Methylnaphthalene	53		218	254		ug/Kg	⊗	92	64 - 119	
Acenaphthene	18	J F2	218	254		ug/Kg	⊗	108	68 - 116	
Acenaphthylene	30	J	218	259		ug/Kg	⊗	105	68 - 120	
Anthracene	47	J F2	218	292		ug/Kg	⊗	112	73 - 116	
Benzo[a]anthracene	190		218	431		ug/Kg	⊗	110	76 - 119	
Benzo[a]pyrene	260	F1	218	454		ug/Kg	⊗	87	72 - 117	
Benzo[b]fluoranthene	570		218	744		ug/Kg	⊗	81	63 - 132	
Benzo[g,h,i]perylene	ND	F1	218	358	F1	ug/Kg	⊗	164	55 - 139	
Benzo[k]fluoranthene	440	F1	218	432	F1	ug/Kg	⊗	-1	63 - 119	
Butyl benzyl phthalate	920	B	218	1520	4	ug/Kg	⊗	275	69 - 142	
Chrysene	490		218	662		ug/Kg	⊗	80	75 - 114	
Dibenz(a,h)anthracene	ND	F1	218	113	F1	ug/Kg	⊗	52	56 - 134	
Diethyl phthalate	74	J F2 F1 B	218	294	J	ug/Kg	⊗	101	73 - 116	
Dimethyl phthalate	650	F1	218	859		ug/Kg	⊗	97	78 - 117	
Di-n-butyl phthalate	430	J F1	218	525	J F1	ug/Kg	⊗	42	66 - 140	
Fluoranthene	700	F1	218	1010	F1	ug/Kg	⊗	142	73 - 125	
Fluorene	34	J	218	281		ug/Kg	⊗	113	70 - 121	
Indeno[1,2,3-cd]pyrene	ND	F2	218	254		ug/Kg	⊗	116	56 - 127	
Naphthalene	36	J	218	278		ug/Kg	⊗	111	62 - 112	
Phenanthrene	300		218	502		ug/Kg	⊗	94	73 - 106	
Pyrene	1300		218	1520	4	ug/Kg	⊗	112	70 - 120	
<b>Surrogate</b>		<b>MS</b>	<b>MS</b>							
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>						
Terphenyl-d14 (Surr)		164	X	42 - 151						

Lab Sample ID: 580-55916-5 MSD

Matrix: Solid

Analysis Batch: 208823

Client Sample ID: CB5A-S-151215

Prep Type: Total/NA

Prep Batch: 208490

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
2-Methylnaphthalene	53		224	224		ug/Kg	⊗	77	64 - 119	12	27
Acenaphthene	18	J F2	224	189	F2	ug/Kg	⊗	76	68 - 116	29	27
Acenaphthylene	30	J	224	204		ug/Kg	⊗	78	68 - 120	23	28
Anthracene	47	J F2	224	216	F2	ug/Kg	⊗	76	73 - 116	30	27
Benzo[a]anthracene	190		224	419		ug/Kg	⊗	102	76 - 119	3	27
Butyl benzyl phthalate	920	B	224	1430	4	ug/Kg	⊗	230	69 - 142	6	60
Chrysene	490		224	695		ug/Kg	⊗	93	75 - 114	5	26
Diethyl phthalate	74	J F2 F1 B	224	221	J F1 F2	ug/Kg	⊗	66	73 - 116	28	26
Dimethyl phthalate	650	F1	224	772	F1	ug/Kg	⊗	55	78 - 117	11	60
Di-n-butyl phthalate	430	J F1	224	477	J F1	ug/Kg	⊗	19	66 - 140	10	60
Fluoranthene	700	F1	224	994	F1	ug/Kg	⊗	133	73 - 125	1	36
Fluorene	34	J	224	253		ug/Kg	⊗	98	70 - 121	11	31
Naphthalene	36	J	224	227		ug/Kg	⊗	85	62 - 112	20	26
Phenanthrene	300		224	532		ug/Kg	⊗	105	73 - 106	6	28
Pyrene	1300		224	1490	4	ug/Kg	⊗	95	70 - 120	2	31

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 580-55916-5 MSD**
**Matrix: Solid****Analysis Batch: 208823**
**Client Sample ID: CB5A-S-151215**
**Prep Type: Total/NA****Prep Batch: 208490**

Surrogate	MSD	MSD	%Recovery	Qualifier	Limits
Terphenyl-d14 (Surr)			122		42 - 151

**Lab Sample ID: MB 580-208745/1-A**
**Matrix: Water****Analysis Batch: 208823**
**Client Sample ID: Method Blank**
**Prep Type: Total/NA****Prep Batch: 208745**

Analyte	MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND				0.20	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Acenaphthene	ND				0.10	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Acenaphthylene	ND				0.080	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Anthracene	ND				0.040	0.010	ug/L		12/29/15 14:58	12/30/15 18:33	1
Benzo[a]anthracene	ND				0.060	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Benzo[a]pyrene	ND				0.040	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Benzo[b]fluoranthene	ND				0.080	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Benzo[g,h,i]perylene	ND				0.060	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Benzo[k]fluoranthene	ND				0.060	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Bis(2-ethylhexyl) phthalate	ND				3.0	1.2	ug/L		12/29/15 14:58	12/30/15 18:33	1
Butyl benzyl phthalate	ND				0.60	0.20	ug/L		12/29/15 14:58	12/30/15 18:33	1
Chrysene	ND				0.040	0.013	ug/L		12/29/15 14:58	12/30/15 18:33	1
Dibenz(a,h)anthracene	ND				0.060	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Diethyl phthalate	ND				0.40	0.10	ug/L		12/29/15 14:58	12/30/15 18:33	1
Dimethyl phthalate	ND				0.40	0.10	ug/L		12/29/15 14:58	12/30/15 18:33	1
Di-n-butyl phthalate	ND				0.40	0.13	ug/L		12/29/15 14:58	12/30/15 18:33	1
Di-n-octyl phthalate	ND				0.40	0.18	ug/L		12/29/15 14:58	12/30/15 18:33	1
Fluoranthene	ND				0.050	0.013	ug/L		12/29/15 14:58	12/30/15 18:33	1
Fluorene	ND				0.060	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Indeno[1,2,3-cd]pyrene	ND				0.060	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Naphthalene	ND				0.40	0.10	ug/L		12/29/15 14:58	12/30/15 18:33	1
Phenanthrene	ND				0.080	0.020	ug/L		12/29/15 14:58	12/30/15 18:33	1
Pyrene	ND				0.060	0.013	ug/L		12/29/15 14:58	12/30/15 18:33	1
Surrogate	MB	MB	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)			111			64 - 150			12/29/15 14:58	12/30/15 18:33	1

**Lab Sample ID: LCS 580-208745/2-A**
**Matrix: Water****Analysis Batch: 208823**
**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA****Prep Batch: 208745**

Analyte	Spike Added	LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
2-Methylnaphthalene	2.00	1.98		ug/L		99	56 - 125
Acenaphthene	2.00	1.85		ug/L		93	63 - 125
Acenaphthylene	2.00	1.68		ug/L		84	62 - 125
Anthracene	2.00	1.69		ug/L		84	50 - 125
Benzo[a]anthracene	2.00	2.02		ug/L		101	65 - 125
Benzo[a]pyrene	2.00	1.62		ug/L		81	45 - 125
Benzo[b]fluoranthene	2.00	2.29		ug/L		114	70 - 129
Benzo[g,h,i]perylene	2.00	2.11		ug/L		105	65 - 153
Benzo[k]fluoranthene	2.00	2.03		ug/L		102	70 - 123

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 580-208745/2-A**
**Matrix: Water**
**Analysis Batch: 208823**
**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 208745**

Analyte	Spike	LCS		Unit	D	%Rec	Limits
	Added	Result	Qualifier				
Bis(2-ethylhexyl) phthalate	2.00	2.95	J	ug/L		148	70 - 185
Butyl benzyl phthalate	2.00	2.46		ug/L		123	60 - 167
Chrysene	2.00	1.96		ug/L		98	70 - 125
Dibenz(a,h)anthracene	2.00	2.00		ug/L		100	69 - 154
Diethyl phthalate	2.00	2.03		ug/L		102	60 - 150
Dimethyl phthalate	2.00	2.21		ug/L		110	65 - 155
Di-n-butyl phthalate	2.00	2.46		ug/L		123	55 - 167
Di-n-octyl phthalate	2.00	2.02		ug/L		101	55 - 150
Fluoranthene	2.00	2.29		ug/L		114	70 - 145
Fluorene	2.00	2.09		ug/L		105	69 - 125
Indeno[1,2,3-cd]pyrene	2.00	2.11		ug/L		106	70 - 136
Naphthalene	2.00	1.99		ug/L		99	56 - 125
Phenanthrene	2.00	2.03		ug/L		101	70 - 125
Pyrene	2.00	2.13		ug/L		107	70 - 133
<b>Surrogate</b>		<b>LCS</b>	<b>LCS</b>				
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>				
Terphenyl-d14 (Surr)		114		64 - 150			

**Lab Sample ID: LCSD 580-208745/3-A**
**Matrix: Water**
**Analysis Batch: 208823**
**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 208745**

Analyte	Spike	LCSD		Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
2-Methylnaphthalene	2.00	2.04		ug/L		102	56 - 125	3	20
Acenaphthene	2.00	1.79		ug/L		90	63 - 125	3	20
Acenaphthylene	2.00	1.53		ug/L		76	62 - 125	10	20
Anthracene	2.00	1.52		ug/L		76	50 - 125	10	20
Benzo[a]anthracene	2.00	1.88		ug/L		94	65 - 125	7	20
Benzo[a]pyrene	2.00	1.33		ug/L		67	45 - 125	19	20
Benzo[b]fluoranthene	2.00	2.11		ug/L		106	70 - 129	8	20
Benzo[g,h,i]perylene	2.00	1.90		ug/L		95	65 - 153	10	20
Benzo[k]fluoranthene	2.00	1.75		ug/L		88	70 - 123	15	20
Bis(2-ethylhexyl) phthalate	2.00	2.24	J *	ug/L		112	70 - 185	27	20
Butyl benzyl phthalate	2.00	2.42		ug/L		121	60 - 167	2	20
Chrysene	2.00	2.01		ug/L		100	70 - 125	2	20
Dibenz(a,h)anthracene	2.00	1.87		ug/L		94	69 - 154	7	20
Diethyl phthalate	2.00	1.86		ug/L		93	60 - 150	9	20
Dimethyl phthalate	2.00	2.15		ug/L		107	65 - 155	3	20
Di-n-butyl phthalate	2.00	2.28		ug/L		114	55 - 167	8	20
Di-n-octyl phthalate	2.00	2.10		ug/L		105	55 - 150	4	20
Fluoranthene	2.00	2.17		ug/L		108	70 - 145	6	20
Fluorene	2.00	1.97		ug/L		99	69 - 125	6	20
Indeno[1,2,3-cd]pyrene	2.00	1.91		ug/L		96	70 - 136	10	20
Naphthalene	2.00	1.90		ug/L		95	56 - 125	5	20
Phenanthrene	2.00	1.92		ug/L		96	70 - 125	6	20
Pyrene	2.00	1.99		ug/L		99	70 - 133	7	20

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID:** LCSD 580-208745/3-A

**Matrix:** Water

**Analysis Batch:** 208823

**Client Sample ID:** Lab Control Sample Dup

**Prep Type:** Total/NA

**Prep Batch:** 208745

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Terphenyl-d14 (Surr)	115		64 - 150

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL

**Lab Sample ID:** 580-55916-5 MS

**Matrix:** Solid

**Analysis Batch:** 209032

**Client Sample ID:** CB5A-S-151215

**Prep Type:** Total/NA

**Prep Batch:** 208490

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier				
Di-n-octyl phthalate - DL	750	J F1	218	ND	F1	ug/Kg	⊗	0	65 - 141
<b>Surrogate</b>									
Terphenyl-d14 (Surr) - DL	25	X		42 - 151					

**Lab Sample ID:** 580-55916-5 MSD

**Matrix:** Solid

**Analysis Batch:** 209032

**Client Sample ID:** CB5A-S-151215

**Prep Type:** Total/NA

**Prep Batch:** 208490

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier					
Benzo[a]pyrene - DL	290	F1	224	615	F1	ug/Kg	⊗	143	72 - 117	NC
Benzo[b]fluoranthene - DL	650	F1	224	835		ug/Kg	⊗	83	63 - 132	NC
Benzo[g,h,i]perylene - DL	460	F1 F2	224	407	F1 F2	ug/Kg	⊗	-23	55 - 139	185
Benzo[k]fluoranthene - DL	500	F1	224	413	F1	ug/Kg	⊗	-40	63 - 119	NC
Dibenz(a,h)anthracene - DL	57	J F1 F2	224	186	F2	ug/Kg	⊗	58	56 - 134	147
Di-n-octyl phthalate - DL	750	J F1	224	1580	F1	ug/Kg	⊗	369	65 - 141	NC
Indeno[1,2,3-cd]pyrene - DL	170	F1	224	180	F1	ug/Kg	⊗	3	56 - 127	NC
<b>Surrogate</b>										
Terphenyl-d14 (Surr) - DL	183	X		42 - 151						

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL2

**Lab Sample ID:** 580-55916-5 MS

**Matrix:** Solid

**Analysis Batch:** 209032

**Client Sample ID:** CB5A-S-151215

**Prep Type:** Total/NA

**Prep Batch:** 208490

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier					
Bis(2-ethylhexyl) phthalate - DL2	16000	F2	218	262000	E 4	ug/Kg	⊗	11261	62 - 144	8

**Lab Sample ID:** 580-55916-5 MSD

**Matrix:** Solid

**Analysis Batch:** 209032

**Client Sample ID:** CB5A-S-151215

**Prep Type:** Total/NA

**Prep Batch:** 208490

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier					
Bis(2-ethylhexyl) phthalate - DL2	16000	F2	224	49500	4 F2	ug/Kg	⊗	15053	62 - 144	136

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 440-301686/1-A

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 301755

Prep Batch: 301686

Analyte	MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD		ND			0.10	0.020	ug/L		12/21/15 10:34	12/22/15 13:18	1
4,4'-DDD		ND			0.0050	0.0040	ug/L		12/21/15 10:34	12/22/15 13:18	1
4,4'-DDE		ND			0.0050	0.0030	ug/L		12/21/15 10:34	12/22/15 13:18	1
2,4'-DDE		ND			0.10	0.020	ug/L		12/21/15 10:34	12/22/15 13:18	1
4,4'-DDT		ND			0.010	0.0040	ug/L		12/21/15 10:34	12/22/15 13:18	1
Aldrin		ND			0.0050	0.0015	ug/L		12/21/15 10:34	12/22/15 13:18	1
2,4'-DDT		ND			0.10	0.020	ug/L		12/21/15 10:34	12/22/15 13:18	1
Chlordane (technical)		ND			0.10	0.080	ug/L		12/21/15 10:34	12/22/15 13:18	1
Dieldrin		ND			0.0050	0.0020	ug/L		12/21/15 10:34	12/22/15 13:18	1
Endosulfan, alpha		ND			0.0050	0.0030	ug/L		12/21/15 10:34	12/22/15 13:18	1
Endosulfan, beta		ND			0.0050	0.0020	ug/L		12/21/15 10:34	12/22/15 13:18	1
Endosulfan sulfate		ND			0.010	0.0030	ug/L		12/21/15 10:34	12/22/15 13:18	1
Endrin		ND			0.0050	0.0020	ug/L		12/21/15 10:34	12/22/15 13:18	1
Endrin aldehyde		ND			0.010	0.0020	ug/L		12/21/15 10:34	12/22/15 13:18	1
Endrin ketone		ND			0.010	0.0070	ug/L		12/21/15 10:34	12/22/15 13:18	1
Heptachlor		ND			0.010	0.0030	ug/L		12/21/15 10:34	12/22/15 13:18	1
Heptachlor epoxide		ND			0.0050	0.0025	ug/L		12/21/15 10:34	12/22/15 13:18	1
Methoxychlor		ND			0.0050	0.0035	ug/L		12/21/15 10:34	12/22/15 13:18	1
Toxaphene		ND			0.50	0.25	ug/L		12/21/15 10:34	12/22/15 13:18	1

Surrogate	MB	MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surrogate)		28			18 - 134			
Tetrachloro-m-xylene		67			10 - 150			

Lab Sample ID: LCS 440-301686/2-A

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 301755

Prep Batch: 301686

Analyte	Spike	LCS	LCS	%Rec.		
	Added	Result	Qualifier	Unit	D	%Rec
2,4'-DDD	0.250	0.182		ug/L	73	10 - 150
4,4'-DDD	0.250	0.193		ug/L	77	53 - 126
4,4'-DDE	0.250	0.181		ug/L	72	48 - 115
2,4'-DDE	0.250	0.172		ug/L	69	10 - 150
4,4'-DDT	0.250	0.201		ug/L	81	10 - 150
Aldrin	0.250	0.114		ug/L	45	19 - 115
2,4'-DDT	0.250	0.196		ug/L	79	10 - 150
Dieldrin	0.250	0.183		ug/L	73	51 - 117
Endosulfan, alpha	0.250	0.181		ug/L	72	47 - 117
Endosulfan, beta	0.250	0.188		ug/L	75	32 - 128
Endosulfan sulfate	0.250	0.188		ug/L	75	50 - 117
Endrin	0.250	0.184		ug/L	74	51 - 120
Endrin aldehyde	0.250	0.174		ug/L	70	49 - 115
Endrin ketone	0.250	0.188		ug/L	75	51 - 121
Heptachlor	0.250	0.160		ug/L	64	44 - 115
Heptachlor epoxide	0.250	0.174		ug/L	69	35 - 131
Methoxychlor	0.250	0.196		ug/L	79	44 - 142

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

**Lab Sample ID: LCS 440-301686/2-A**

**Matrix: Water**

**Analysis Batch: 301755**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 301686**

Surrogate	LCS	LCS	%Recovery	Qualifier	Limits
DCB Decachlorobiphenyl (Sur)			34		18 - 134
Tetrachloro-m-xylene			55		10 - 150

**Lab Sample ID: LCSD 440-301686/3-A**

**Matrix: Water**

**Analysis Batch: 301755**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 301686**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
2,4'-DDD	0.250	0.199		ug/L	80	10 - 150	9	30	
4,4'-DDD	0.250	0.212		ug/L	85	53 - 126	10	35	
4,4'-DDE	0.250	0.201		ug/L	81	48 - 115	10	35	
2,4'-DDE	0.250	0.191		ug/L	77	10 - 150	10	30	
4,4'-DDT	0.250	0.224		ug/L	90	10 - 150	11	35	
Aldrin	0.250	0.135		ug/L	54	19 - 115	17	35	
2,4'-DDT	0.250	0.218		ug/L	87	10 - 150	11	30	
Dieldrin	0.250	0.199		ug/L	80	51 - 117	9	35	
Endosulfan, alpha	0.250	0.198		ug/L	79	47 - 117	9	34	
Endosulfan, beta	0.250	0.206		ug/L	82	32 - 128	9	35	
Endosulfan sulfate	0.250	0.202		ug/L	81	50 - 117	7	35	
Endrin	0.250	0.203		ug/L	81	51 - 120	10	35	
Endrin aldehyde	0.250	0.189		ug/L	75	49 - 115	8	35	
Endrin ketone	0.250	0.207		ug/L	83	51 - 121	9	35	
Heptachlor	0.250	0.178		ug/L	71	44 - 115	10	35	
Heptachlor epoxide	0.250	0.191		ug/L	76	35 - 131	9	35	
Methoxychlor	0.250	0.210		ug/L	84	44 - 142	7	35	

Surrogate	LCSD	LCSD	%Recovery	Qualifier	Limits
DCB Decachlorobiphenyl (Sur)	28				18 - 134
Tetrachloro-m-xylene	62				10 - 150

## Method: 8081B - Organochlorine Pesticides (GC)

**Lab Sample ID: MB 580-208163/1-A**

**Matrix: Solid**

**Analysis Batch: 209826**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 208163**

Analyte	MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-Chlordane			ND		0.10	0.013	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Chlordane (technical)			ND		1.0	0.14	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
4,4'-DDD			0.0298	J	0.20	0.0074	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
2,4'-DDE			ND		0.20	0.030	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
4,4'-DDE			0.0366	J	0.20	0.014	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Endosulfan, alpha			ND		0.10	0.010	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Endosulfan, beta			ND		0.20	0.011	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Endosulfan sulfate			ND		0.20	0.0046	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Endrin ketone			ND		0.20	0.012	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
gamma-Chlordane			ND		0.10	0.013	ug/Kg		12/18/15 11:04	01/20/16 10:49	1

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 580-208163/1-A

Client Sample ID: Method Blank

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 209826

Prep Batch: 208163

Analyte	MB		RL	MDL	Unit	D	Prepared		Dil Fac
	Result	Qualifier					Prepared	Analyzed	
Heptachlor	ND		0.20	0.015	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Heptachlor epoxide	ND		0.10	0.0039	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Methoxychlor	ND		1.0	0.013	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Toxaphene	ND		10	0.78	ug/Kg		12/18/15 11:04	01/20/16 10:49	1
Dieldrin	ND		0.20	0.012	ug/Kg		12/18/15 11:04	01/20/16 10:49	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCB Decachlorobiphenyl	82		60 - 128	12/18/15 11:04	01/20/16 10:49	1
Tetrachloro-m-xylene	67		35 - 129	12/18/15 11:04	01/20/16 10:49	1

Lab Sample ID: LCS 580-208163/2-B

Client Sample ID: Lab Control Sample

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 209826

Prep Batch: 208163

Analyte	Spike		LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
	Added	Result						Limits	
Aldrin	5.00	3.79	ug/Kg			76	59 - 127		
alpha-Chlordane	5.00	4.14	ug/Kg			83	52 - 137		
4,4'-DDD	5.00	3.97	ug/Kg			79	48 - 136		
4,4'-DDE	5.00	4.10	ug/Kg			82	50 - 138		
4,4'-DDT	5.00	4.37	ug/Kg			87	53 - 132		
Endosulfan, alpha	5.00	3.96	ug/Kg			79	57 - 140		
Endosulfan, beta	5.00	4.09	ug/Kg			82	58 - 144		
Endosulfan sulfate	5.00	3.74	ug/Kg			75	55 - 125		
Endrin	5.00	4.30	ug/Kg			86	51 - 143		
Endrin aldehyde	5.00	1.63 *	ug/Kg			33	45 - 130		
Endrin ketone	5.00	3.73	ug/Kg			75	53 - 139		
gamma-Chlordane	5.00	4.30	ug/Kg			86	52 - 137		
Heptachlor	5.00	3.98	ug/Kg			80	43 - 141		
Heptachlor epoxide	5.00	3.99	ug/Kg			80	47 - 143		
Methoxychlor	5.00	4.27	ug/Kg			85	56 - 137		
Dieldrin	5.00	4.28	ug/Kg			86	53 - 145		

Surrogate	LCS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl	75		60 - 128
Tetrachloro-m-xylene	62		35 - 129

Lab Sample ID: LCSD 580-208163/3-B

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 209826

Prep Batch: 208163

Analyte	Spike		LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	
	Added	Result						RPD	Limit
Aldrin	5.00	3.93	ug/Kg			79	59 - 127	4	19
alpha-Chlordane	5.00	4.24	ug/Kg			85	52 - 137	3	17
4,4'-DDD	5.00	4.07	ug/Kg			81	48 - 136	2	18
4,4'-DDE	5.00	4.13	ug/Kg			83	50 - 138	1	17
4,4'-DDT	5.00	4.52	ug/Kg			90	53 - 132	4	20
Endosulfan, alpha	5.00	4.04	ug/Kg			81	57 - 140	2	19
Endosulfan, beta	5.00	4.23	ug/Kg			85	58 - 144	3	19

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8081B - Organochlorine Pesticides (GC) (Continued)

**Lab Sample ID: LCSD 580-208163/3-B****Matrix: Solid****Analysis Batch: 209826****Client Sample ID: Lab Control Sample Dup****Prep Type: Total/NA****Prep Batch: 208163**

Analyte		Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	RPD	Limit
		Added	Result	Qualifier							
Endosulfan sulfate		5.00	3.94		ug/Kg		79	55 - 125	5	18	
Endrin		5.00	4.57		ug/Kg		91	51 - 143	6	18	
Endrin aldehyde		5.00	1.60 *		ug/Kg		32	45 - 130	2	21	
Endrin ketone		5.00	3.86		ug/Kg		77	53 - 139	4	17	
gamma-Chlordane		5.00	4.46		ug/Kg		89	52 - 137	4	17	
Heptachlor		5.00	4.24		ug/Kg		85	43 - 141	6	18	
Heptachlor epoxide		5.00	4.15		ug/Kg		83	47 - 143	4	17	
Methoxychlor		5.00	4.50		ug/Kg		90	56 - 137	5	17	
Dieldrin		5.00	4.45		ug/Kg		89	53 - 145	4	18	

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl	75		60 - 128
Tetrachloro-m-xylene	65		35 - 129

**Lab Sample ID: 580-55916-5 MS****Matrix: Solid****Analysis Batch: 209826****Client Sample ID: CB5A-S-151215****Prep Type: Total/NA****Prep Batch: 208163**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier						
Aldrin	0.37	J	10.9	8.13		ug/Kg	*	71	59 - 127		
alpha-Chlordane	0.53	J F1	10.9	13.7		ug/Kg	*	121	52 - 137		
4,4'-DDD	3.9	B	10.9	11.0		ug/Kg	*	65	48 - 136		
4,4'-DDE	2.4	B	10.9	24.4	F1	ug/Kg	*	202	50 - 138		
4,4'-DDT	4.2		10.9	13.4		ug/Kg	*	84	53 - 132		
Endosulfan, alpha	0.79	J	10.9	8.50		ug/Kg	*	71	57 - 140		
Endosulfan, beta	1.7	J	10.9	6.99	F1	ug/Kg	*	48	58 - 144		
Endosulfan sulfate	0.51	J F1	10.9	8.33		ug/Kg	*	72	55 - 125		
Endrin	3.5	F2	10.9	12.3		ug/Kg	*	81	51 - 143		
Endrin aldehyde	5.9	F1 F2 *	10.9	4.86	F1	ug/Kg	*	-10	45 - 130		
Endrin ketone	6.4	F2 F1	10.9	17.7		ug/Kg	*	103	53 - 139		
gamma-Chlordane	2.2		10.9	11.2		ug/Kg	*	82	52 - 137		
Heptachlor	0.30	J F1	10.9	10.5		ug/Kg	*	94	43 - 141		
Heptachlor epoxide	0.35	J	10.9	8.42		ug/Kg	*	74	47 - 143		
Methoxychlor	4.4	J F2	10.9	15.1		ug/Kg	*	98	56 - 137		
Dieldrin	ND		10.9	10.0		ug/Kg	*	92	53 - 145		

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl	399	X	60 - 128
Tetrachloro-m-xylene	88		35 - 129

**Lab Sample ID: 580-55916-5 MSD****Matrix: Solid****Analysis Batch: 209826****Client Sample ID: CB5A-S-151215****Prep Type: Total/NA****Prep Batch: 208163**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier						
Aldrin	0.37	J	11.2	8.10		ug/Kg	*	69	59 - 127	0	19
alpha-Chlordane	0.53	J F1	11.2	20.0	F1 F2	ug/Kg	*	173	52 - 137	37	17
4,4'-DDD	3.9	B	11.2	11.8		ug/Kg	*	70	48 - 136	7	18

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 580-55916-5 MSD

Client Sample ID: CB5A-S-151215

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 209826

Prep Batch: 208163

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
4,4'-DDE	2.4	B	11.2	14.0	F2	ug/Kg	⊗	103	50 - 138	54	17
4,4'-DDT	4.2		11.2	11.1		ug/Kg	⊗	61	53 - 132	18	20
Endosulfan, alpha	0.79	J	11.2	8.82		ug/Kg	⊗	71	57 - 140	4	19
Endosulfan, beta	1.7	J	11.2	7.62	F1	ug/Kg	⊗	52	58 - 144	9	19
Endosulfan sulfate	0.51	J F1	11.2	11.4	F2	ug/Kg	⊗	97	55 - 125	32	18
Endrin	3.5	F2	11.2	9.90	F2	ug/Kg	⊗	57	51 - 143	22	18
Endrin aldehyde	5.9	F1 F2 *	11.2	6.13	F1 F2	ug/Kg	⊗	2	45 - 130	23	21
Endrin ketone	6.4	F2 F1	11.2	23.8	F1 F2	ug/Kg	⊗	154	53 - 139	29	17
gamma-Chlordane	2.2		11.2	11.7		ug/Kg	⊗	85	52 - 137	5	17
Heptachlor	0.30	J F1	11.2	9.38		ug/Kg	⊗	81	43 - 141	11	18
Heptachlor epoxide	0.35	J	11.2	7.87		ug/Kg	⊗	67	47 - 143	7	17
Methoxychlor	4.4	J F2	11.2	10.8	J F2	ug/Kg	⊗	57	56 - 137	33	17
Dieldrin	ND		11.2	10.4		ug/Kg	⊗	93	53 - 145	4	18
<b>Surrogate</b>		<b>MSD</b>	<b>MSD</b>								
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>							
DCB Decachlorobiphenyl		565	X	60 - 128							
Tetrachloro-m-xylene		100		35 - 129							

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 580-208163/1-A

Client Sample ID: Method Blank

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 209570

Prep Batch: 208163

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-1016	ND		1.0	0.050	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1221	ND		1.1	0.34	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1232	ND		1.1	0.22	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1242	ND		1.0	0.21	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1248	ND		1.1	0.16	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1254	ND		1.0	0.090	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1260	ND		1.0	0.13	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1262	ND		1.0	0.19	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
PCB-1268	ND		1.0	0.21	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
Polychlorinated biphenyls, Total	ND		1.1	0.34	ug/Kg		12/18/15 11:04	01/15/16 06:15	1
<b>Surrogate</b>		<b>MB</b>	<b>MB</b>						
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>
DCB Decachlorobiphenyl		63		50 - 140				12/18/15 11:04	01/15/16 06:15
Tetrachloro-m-xylene		50		45 - 135				12/18/15 11:04	01/15/16 06:15

Lab Sample ID: LCS 580-208163/8-A

Client Sample ID: Lab Control Sample

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 209755

Prep Batch: 208163

Analyte	Spike	LCS	LCS	Unit	D	%Rec.	Limits
	Added	Result	Qualifier				
PCB-1016	25.0	23.6		ug/Kg		94	40 - 140
PCB-1260	25.0	16.3		ug/Kg		65	60 - 130

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

**Lab Sample ID: LCS 580-208163/8-A**

**Matrix: Solid**

**Analysis Batch: 209755**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 208163**

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	64		50 - 140
Tetrachloro-m-xylene	72		45 - 135

**Lab Sample ID: LCSD 580-208163/9-A**

**Matrix: Solid**

**Analysis Batch: 209755**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 208163**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	RPD
PCB-1016	25.0	25.6		ug/Kg		102	40 - 140
PCB-1260	25.0	17.7		ug/Kg		71	60 - 130
Surrogate	%Recovery	LCSD Limits					

**Lab Sample ID: 580-55916-5 MS**

**Matrix: Solid**

**Analysis Batch: 209755**

**Client Sample ID: CB5A-S-151215**

**Prep Type: Total/NA**

**Prep Batch: 208163**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	RPD
PCB-1016	ND		54.6	45.4		ug/Kg	⊗	83	40 - 140
PCB-1260	ND	F1 F2	54.6	45.7		ug/Kg	⊗	84	60 - 130
Surrogate	%Recovery	MS Limits							

**Lab Sample ID: 580-55916-5 MSD**

**Matrix: Solid**

**Analysis Batch: 209755**

**Client Sample ID: CB5A-S-151215**

**Prep Type: Total/NA**

**Prep Batch: 208163**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	RPD
PCB-1016	ND		57.8	50.1		ug/Kg	⊗	87	40 - 140
PCB-1260	ND	F1 F2	57.8	76.8	F1 F2	ug/Kg	⊗	133	60 - 130
Surrogate	%Recovery	MSD Limits							

**Lab Sample ID: MB 580-208302/1-A**

**Matrix: Water**

**Analysis Batch: 208449**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 208302**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.25	0.0085	ug/L		12/21/15 15:13	12/23/15 02:35	1
PCB-1221	ND		0.25	0.015	ug/L		12/21/15 15:13	12/23/15 02:35	1
PCB-1232	ND		0.25	0.0075	ug/L		12/21/15 15:13	12/23/15 02:35	1

TestAmerica Seattle

**QC Sample Results**

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)****Lab Sample ID: MB 580-208302/1-A****Matrix: Water****Analysis Batch: 208449****Client Sample ID: Method Blank****Prep Type: Total/NA****Prep Batch: 208302**

Analyte	MB MB		RL	MDL	Unit	D	Prepared		Dil Fac
	Result	Qualifier					Prepared	Analyzed	
PCB-1242	ND		0.25	0.0070	ug/L	12/21/15 15:13	12/23/15 02:35	1	
PCB-1248	ND		0.25	0.0070	ug/L	12/21/15 15:13	12/23/15 02:35	1	
PCB-1254	ND		0.25	0.0075	ug/L	12/21/15 15:13	12/23/15 02:35	1	
PCB-1260	ND		0.25	0.020	ug/L	12/21/15 15:13	12/23/15 02:35	1	
PCB-1262	ND		0.25	0.0065	ug/L	12/21/15 15:13	12/23/15 02:35	1	
PCB-1268	ND		0.25	0.0070	ug/L	12/21/15 15:13	12/23/15 02:35	1	
Polychlorinated biphenyls, Total	ND		0.25	0.020	ug/L	12/21/15 15:13	12/23/15 02:35	1	
Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
DCB Decachlorobiphenyl	73		38 - 121	12/21/15 15:13	12/23/15 02:35	1			
Tetrachloro-m-xylene	70		26 - 124	12/21/15 15:13	12/23/15 02:35	1			

**Lab Sample ID: LCS 580-208302/2-A****Matrix: Water****Analysis Batch: 208449****Client Sample ID: Lab Control Sample****Prep Type: Total/NA****Prep Batch: 208302**

Analyte	Spike		Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
	Added	LCS						Limits	
PCB-1016	0.500	0.460			ug/L		92	25 - 145	
PCB-1260	0.500	0.395			ug/L		79	30 - 145	
Surrogate	LCS		Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
DCB Decachlorobiphenyl	76		38 - 121	12/21/15 15:13	12/23/15 02:35	1			
Tetrachloro-m-xylene	74		26 - 124	12/21/15 15:13	12/23/15 02:35	1			

**Lab Sample ID: LCSD 580-208302/3-A****Matrix: Water****Analysis Batch: 208449****Client Sample ID: Lab Control Sample Dup****Prep Type: Total/NA****Prep Batch: 208302**

Analyte	Spike		Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	
	Added	LCSD						Limits	RPD
PCB-1016	0.500	0.420			ug/L		84	25 - 145	9
PCB-1260	0.500	0.370			ug/L		74	30 - 145	7
Surrogate	LCSD		Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
DCB Decachlorobiphenyl	73		38 - 121	12/21/15 15:13	12/23/15 02:35	1			
Tetrachloro-m-xylene	72		26 - 124	12/21/15 15:13	12/23/15 02:35	1			

**Method: 6020 - Metals (ICP/MS)****Lab Sample ID: MB 440-302224/1-A****Matrix: Water****Analysis Batch: 302363****Client Sample ID: Method Blank****Prep Type: Total Recoverable****Prep Batch: 302224**

Analyte	MB MB		RL	MDL	Unit	D	Prepared		Dil Fac
	Result	Qualifier					Prepared	Analyzed	
Arsenic	ND		0.20	0.10	ug/L	12/23/15 08:32	12/23/15 16:18	1	
Cadmium	ND		0.10	0.050	ug/L	12/23/15 08:32	12/23/15 16:18	1	
Chromium	ND		0.50	0.25	ug/L	12/23/15 08:32	12/23/15 16:18	1	
Copper	ND		0.50	0.25	ug/L	12/23/15 08:32	12/23/15 16:18	1	

TestAmerica Seattle

## QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

### Method: 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 440-302224/1-A**

Matrix: Water

Analysis Batch: 302363

**Client Sample ID: Method Blank****Prep Type: Total Recoverable****Prep Batch: 302224**

Analyte	MB		MB		D	Prepared	Analyzed	Dil Fac
	Result	Qualifier	RL	MDL	Unit			
Lead	ND		0.10	0.050	ug/L	12/23/15 08:32	12/23/15 16:18	1
Nickel	ND		0.30	0.15	ug/L	12/23/15 08:32	12/23/15 16:18	1
Zinc	ND		5.0	2.0	ug/L	12/23/15 08:32	12/23/15 16:18	1

**Lab Sample ID: LCS 440-302224/2-A**

Matrix: Water

Analysis Batch: 302363

**Client Sample ID: Lab Control Sample****Prep Type: Total Recoverable****Prep Batch: 302224**

Analyte	Spike		LCS		LCS		D	%Rec	Limits
	Added	Result	Result	Qualifier	Unit	D			
Arsenic	80.0	82.7			ug/L		103	80 - 120	
Cadmium	80.0	80.7			ug/L		101	80 - 120	
Chromium	80.0	79.1			ug/L		99	80 - 120	
Copper	80.0	80.0			ug/L		100	80 - 120	
Lead	80.0	81.6			ug/L		102	80 - 120	
Nickel	80.0	79.6			ug/L		100	80 - 120	
Zinc	80.0	81.6			ug/L		102	80 - 120	

**Lab Sample ID: 580-55916-6 MS**

Matrix: Water

Analysis Batch: 302363

**Client Sample ID: RB-1-151215****Prep Type: Total Recoverable****Prep Batch: 302224**

Analyte	Sample		Spike		MS		D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier	Unit			
Arsenic	ND		80.0	79.7		ug/L		100	75 - 125
Cadmium	ND		80.0	78.0		ug/L		98	75 - 125
Chromium	ND		80.0	78.5		ug/L		98	75 - 125
Copper	ND		80.0	79.8		ug/L		100	75 - 125
Lead	0.051	J	80.0	79.7		ug/L		100	75 - 125
Nickel	ND		80.0	78.6		ug/L		98	75 - 125
Zinc	ND		80.0	76.0		ug/L		95	75 - 125

**Lab Sample ID: 580-55916-6 MSD**

Matrix: Water

Analysis Batch: 302363

**Client Sample ID: RB-1-151215****Prep Type: Total Recoverable****Prep Batch: 302224**

Analyte	Sample		Spike		MSD		D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier	Unit					
Arsenic	ND		80.0	80.8		ug/L		101	75 - 125	1	20
Cadmium	ND		80.0	79.2		ug/L		99	75 - 125	1	20
Chromium	ND		80.0	79.7		ug/L		100	75 - 125	1	20
Copper	ND		80.0	80.7		ug/L		101	75 - 125	1	20
Lead	0.051	J	80.0	80.7		ug/L		101	75 - 125	1	20
Nickel	ND		80.0	79.4		ug/L		99	75 - 125	1	20
Zinc	ND		80.0	75.0		ug/L		94	75 - 125	1	20

**Lab Sample ID: MB 440-303360/1-A**

Matrix: Water

Analysis Batch: 303579

**Client Sample ID: Method Blank****Prep Type: Total Recoverable****Prep Batch: 303360**

Analyte	MB		MB		D	Prepared	Analyzed	Dil Fac
	Result	Qualifier	RL	MDL	Unit			
Manganese	ND		0.50	0.25	ug/L	12/31/15 10:10	12/31/15 18:41	1

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 440-303360/2-A**

**Matrix: Water**

**Analysis Batch: 303579**

Analyte	Spike	LCS	LCS	%Rec.		
	Added	Result	Qualifier	Unit	D	%Rec
Manganese	80.0	77.6		ug/L	97	80 - 120

**Lab Sample ID: LCSD 440-303360/3-A**

**Matrix: Water**

**Analysis Batch: 303579**

Analyte	Spike	LCSD	LCSD	%Rec.			RPD
	Added	Result	Qualifier	Unit	D	%Rec	RPD
Manganese	80.0	78.7		ug/L	98	80 - 120	1

## Method: 6020A - Metals (ICP/MS)

**Lab Sample ID: MB 580-208186/12-A**

**Matrix: Solid**

**Analysis Batch: 208269**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		500	180	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Cadmium	ND		200	19	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Chromium	ND		500	63	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Copper	ND		400	98	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Lead	ND		500	48	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Manganese	ND		1000	170	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Nickel	ND		500	81	ug/Kg		12/18/15 13:06	12/19/15 02:31	10
Zinc	ND		5000	1100	ug/Kg		12/18/15 13:06	12/19/15 02:31	10

**Lab Sample ID: LCS 580-208186/13-A**

**Matrix: Solid**

**Analysis Batch: 208269**

Analyte	Spike	LCS	LCS	%Rec.		
	Added	Result	Qualifier	Unit	D	%Rec
Arsenic	200000	193000		ug/Kg	97	80 - 120
Cadmium	5000	4890		ug/Kg	98	80 - 120
Chromium	20000	20100		ug/Kg	100	80 - 120
Copper	25000	24800		ug/Kg	99	80 - 120
Lead	50000	47500		ug/Kg	95	80 - 120
Manganese	50000	49400		ug/Kg	99	80 - 120
Nickel	50000	49200		ug/Kg	98	80 - 120
Zinc	200000	191000		ug/Kg	95	80 - 120

**Lab Sample ID: LCSD 580-208186/14-A**

**Matrix: Solid**

**Analysis Batch: 208269**

Analyte	Spike	LCSD	LCSD	%Rec.			RPD
	Added	Result	Qualifier	Unit	D	%Rec	RPD
Arsenic	200000	191000		ug/Kg	95	80 - 120	2
Cadmium	5000	4950		ug/Kg	99	80 - 120	1
Chromium	20000	19700		ug/Kg	99	80 - 120	2
Copper	25000	24700		ug/Kg	99	80 - 120	0
Lead	50000	47100		ug/Kg	94	80 - 120	1

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 208186**

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-208186/14-A

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 208269

Prep Batch: 208186

Analyte	Spike		LCSD Result	LCSD Qualifier	Unit	D	%Rec.		RPD	
	Added						%Rec	Limits	RPD	Limit
Manganese	50000		49200		ug/Kg		98	80 - 120	0	20
Nickel	50000		49100		ug/Kg		98	80 - 120	0	20
Zinc	200000		189000		ug/Kg		95	80 - 120	1	20

Lab Sample ID: 580-55916-1 MS

Client Sample ID: CB6A-S-151215

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 208269

Prep Batch: 208186

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec.		RPD	
	Result	Qualifier	Added	Result	Qualifier			%Rec	Limits	RPD	Limit
Arsenic	1800	J	616000	613000		ug/Kg	⊗	99	80 - 120		
Cadmium	1100		15400	17900		ug/Kg	⊗	109	80 - 120		
Chromium	92000	F1	61600	91600	F1	ug/Kg	⊗	0.2	80 - 120		
Copper	62000	F1	77000	149000		ug/Kg	⊗	112	80 - 120		
Lead	38000		154000	195000		ug/Kg	⊗	102	80 - 120		
Manganese	270000	F1	154000	464000	F1	ug/Kg	⊗	124	80 - 120		
Nickel	48000		154000	179000		ug/Kg	⊗	85	80 - 120		
Zinc	890000	F1	616000	1510000		ug/Kg	⊗	101	80 - 120		

Lab Sample ID: 580-55916-1 MSD

Client Sample ID: CB6A-S-151215

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 208269

Prep Batch: 208186

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec.		RPD	
	Result	Qualifier	Added	Result	Qualifier			%Rec	Limits	RPD	Limit
Arsenic	1800	J	622000	663000		ug/Kg	⊗	106	80 - 120	8	20
Cadmium	1100		15600	18000		ug/Kg	⊗	109	80 - 120	1	20
Chromium	92000	F1	62200	100000	F1	ug/Kg	⊗	14	80 - 120	9	20
Copper	62000	F1	77800	168000	F1	ug/Kg	⊗	136	80 - 120	12	20
Lead	38000		156000	216000		ug/Kg	⊗	114	80 - 120	10	20
Manganese	270000	F1	156000	527000	F1	ug/Kg	⊗	163	80 - 120	13	20
Nickel	48000		156000	196000		ug/Kg	⊗	95	80 - 120	9	20
Zinc	890000	F1	622000	1630000	F1	ug/Kg	⊗	121	80 - 120	8	20

Lab Sample ID: 580-55916-1 DU

Client Sample ID: CB6A-S-151215

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 208269

Prep Batch: 208186

Analyte	Sample	Sample	Spike	DU	DU	Unit	D	%Rec.		RPD	
	Result	Qualifier	Added	Result	Qualifier			%Rec	Limits	RPD	Limit
Arsenic	1800	J		1570	J	ug/Kg	⊗			15	20
Cadmium	1100			1070		ug/Kg	⊗			3	20
Chromium	92000	F1		20300	F3	ug/Kg	⊗			127	20
Copper	62000	F1		54500		ug/Kg	⊗			13	20
Lead	38000			32800		ug/Kg	⊗			14	20
Manganese	270000	F1		241000		ug/Kg	⊗			13	20
Nickel	48000			14700	F3	ug/Kg	⊗			106	20
Zinc	890000	F1		685000	F3	ug/Kg	⊗			26	20

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID:** MB 580-208339/18-A

**Matrix:** Solid

**Analysis Batch:** 208546

**Client Sample ID:** Method Blank

**Prep Type:** Total/NA

**Prep Batch:** 208339

Analyte	MB	MB	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Arsenic	ND				250	90	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Cadmium	ND				100	9.5	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Chromium	ND				250	32	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Copper	ND				200	49	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Lead	ND				250	24	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Manganese	ND				500	85	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Nickel	ND				250	41	ug/Kg		12/22/15 07:57	12/22/15 18:42	5
Zinc	ND				2500	560	ug/Kg		12/22/15 07:57	12/22/15 18:42	5

**Lab Sample ID:** LCS 580-208339/19-A

**Matrix:** Solid

**Analysis Batch:** 208546

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 208339

Analyte	Spike	LCS	LCS	Result	Qualifier	Unit	D	%Rec	%Rec.	
	Added								Limits	RPD
Arsenic	200000	208000				ug/Kg		104	80 - 120	
Cadmium	5000	5030				ug/Kg		101	80 - 120	
Chromium	20000	20900				ug/Kg		104	80 - 120	
Copper	25000	26400				ug/Kg		106	80 - 120	
Lead	50000	49400				ug/Kg		99	80 - 120	
Manganese	50000	51600				ug/Kg		103	80 - 120	
Nickel	50000	53300				ug/Kg		107	80 - 120	
Zinc	200000	207000				ug/Kg		104	80 - 120	

**Lab Sample ID:** LCSD 580-208339/20-A

**Matrix:** Solid

**Analysis Batch:** 208546

**Client Sample ID:** Lab Control Sample Dup

**Prep Type:** Total/NA

**Prep Batch:** 208339

Analyte	Spike	LCSD	LCSD	Result	Qualifier	Unit	D	%Rec	%Rec.		RPD
	Added								Limits	RPD	Limit
Arsenic	200000	209000				ug/Kg		104	80 - 120	0	20
Cadmium	5000	5340				ug/Kg		107	80 - 120	6	20
Chromium	20000	21100				ug/Kg		106	80 - 120	1	20
Copper	25000	26700				ug/Kg		107	80 - 120	1	20
Lead	50000	49000				ug/Kg		98	80 - 120	1	20
Manganese	50000	52100				ug/Kg		104	80 - 120	1	20
Nickel	50000	52700				ug/Kg		105	80 - 120	1	20
Zinc	200000	210000				ug/Kg		105	80 - 120	2	20

**Lab Sample ID:** LCSSRM 580-208339/21-A

**Matrix:** Solid

**Analysis Batch:** 208546

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 208339

Analyte	Spike	LCSSRM	LCSSRM	Result	Qualifier	Unit	D	%Rec	%Rec.	
	Added								Limits	RPD
Arsenic	139000	146000				ug/Kg		104.9	70.4 - 140.	
									3	
Cadmium	96000	92800				ug/Kg		96.7	73.2 - 127.	
									1	
Chromium	136000	140000				ug/Kg		103.0	69.9 - 129.	
									4	
Copper	168000	172000				ug/Kg		102.4	75.6 - 125.	
									0	

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCSSRM 580-208339/21-A**
**Matrix: Solid**
**Analysis Batch: 208546**
**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 208339**

<b>Analyte</b>	<b>Spike Added</b>	LCSSRM	LCSSRM	<b>Unit</b>	<b>D</b>	<b>%Rec.</b>	<b>Limits</b>
		<b>Result</b>	<b>Qualifier</b>				
Lead	133000	130000		ug/Kg		97.9	72.9 - 127. 8
Manganese	297000	297000		ug/Kg		99.8	74.4 - 125. 6
Nickel	123000	127000		ug/Kg		102.9	73.1 - 128. 5
Zinc	189000	195000		ug/Kg		103.3	69.8 - 130. 7

**Lab Sample ID: 580-55916-5 MS**
**Matrix: Solid**
**Analysis Batch: 208546**
**Client Sample ID: CB5A-S-151215**
**Prep Type: Total/NA**
**Prep Batch: 208339**

<b>Analyte</b>	Sample	Sample	Spike	MS	MS	<b>Unit</b>	<b>D</b>	<b>%Rec.</b>	<b>Limits</b>
	<b>Result</b>	<b>Qualifier</b>	<b>Added</b>	<b>Result</b>	<b>Qualifier</b>				
Arsenic	3200	F2	329000	324000		ug/Kg		98	80 - 120
Cadmium	1200		8230	9710		ug/Kg		104	80 - 120
Chromium	44000	F1 F2	32900	86000	F1	ug/Kg		129	80 - 120
Copper	76000	F1	41100	139000	F1	ug/Kg		152	80 - 120
Lead	49000		82300	130000		ug/Kg		99	80 - 120
Manganese	360000	F1	82300	471000	4	ug/Kg		132	80 - 120
Nickel	29000	F2	82300	118000		ug/Kg		109	80 - 120
Zinc	1000000	F1	329000	1560000	F1	ug/Kg		162	80 - 120

**Lab Sample ID: 580-55916-5 MSD**
**Matrix: Solid**
**Analysis Batch: 208546**
**Client Sample ID: CB5A-S-151215**
**Prep Type: Total/NA**
**Prep Batch: 208339**

<b>Analyte</b>	Sample	Sample	Spike	MSD	MSD	<b>Unit</b>	<b>D</b>	<b>%Rec.</b>	<b>RPD</b>	<b>Limit</b>	
	<b>Result</b>	<b>Qualifier</b>	<b>Added</b>	<b>Result</b>	<b>Qualifier</b>						
Arsenic	3200	F2	424000	426000	F2	ug/Kg		100	80 - 120	27	20
Cadmium	1200		10600	11500		ug/Kg		97	80 - 120	17	20
Chromium	44000	F1 F2	42400	110000	F1 F2	ug/Kg		156	80 - 120	24	20
Copper	76000	F1	53000	146000	F1	ug/Kg		132	80 - 120	5	20
Lead	49000		106000	154000		ug/Kg		99	80 - 120	17	20
Manganese	360000	F1	106000	542000	F1	ug/Kg		169	80 - 120	14	20
Nickel	29000	F2	106000	154000	F2	ug/Kg		118	80 - 120	26	20
Zinc	1000000	F1	424000	1530000		ug/Kg		118	80 - 120	2	20

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 580-208354/20-A**
**Matrix: Water**
**Analysis Batch: 208391**
**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 208354**

<b>Analyte</b>	MB	MB	<b>Result</b>	<b>Qualifier</b>	<b>RL</b>	<b>MDL</b>	<b>Unit</b>	<b>D</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
	<b>Result</b>	<b>Qualifier</b>									
Mercury	ND		0.20		0.041	ug/L			12/22/15 09:22	12/22/15 12:26	1

TestAmerica Seattle

# QC Sample Results

Client: ERM-West  
Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID:** LCS 580-208354/21-A

**Matrix:** Water

**Analysis Batch:** 208391

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 208354

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	
Mercury	2.00	2.24		ug/L		112	80 - 120	

**Lab Sample ID:** LCSD 580-208354/22-A

**Client Sample ID:** Lab Control Sample Dup

**Prep Type:** Total/NA

**Prep Batch:** 208354

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	RPD	Limit
Mercury	2.00	2.19		ug/L		109	80 - 120	2 20

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID:** MB 580-208375/20-A

**Client Sample ID:** Method Blank

**Matrix:** Solid

**Prep Type:** Total/NA

**Analysis Batch:** 208508

**Prep Batch:** 208375

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		20	6.0	ug/Kg		12/22/15 12:25	12/22/15 14:44	1

**Lab Sample ID:** LCS 580-208375/21-A

**Client Sample ID:** Lab Control Sample

**Matrix:** Solid

**Prep Type:** Total/NA

**Analysis Batch:** 208508

**Prep Batch:** 208375

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	167	155		ug/Kg		93	80 - 120

**Lab Sample ID:** LCSD 580-208375/22-A

**Client Sample ID:** Lab Control Sample Dup

**Matrix:** Solid

**Prep Type:** Total/NA

**Analysis Batch:** 208508

**Prep Batch:** 208375

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	RPD	Limit
Mercury	167	153		ug/Kg		92	80 - 120	1 20

**Lab Sample ID:** LCSSRM 580-208375/23-A ^10

**Client Sample ID:** Lab Control Sample

**Matrix:** Solid

**Prep Type:** Total/NA

**Analysis Batch:** 208508

**Prep Batch:** 208375

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	Limits
Mercury	12900	13900		ug/Kg		107.5	51.2 - 148.

1

**Lab Sample ID:** MB 580-208600/20-A

**Client Sample ID:** Method Blank

**Matrix:** Solid

**Prep Type:** Total/NA

**Analysis Batch:** 208666

**Prep Batch:** 208600

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		20	6.0	ug/Kg		12/24/15 08:37	12/24/15 13:08	1

TestAmerica Seattle

# QC Sample Results

Client: ERM-West

TestAmerica Job ID: 580-55916-1

Project/Site: Univar Portland (NW Yeon)

## Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 580-208600/21-A

Matrix: Solid

Analysis Batch: 208666

Analyte	Spike	LCS	LCS	%Rec.		
	Added	Result	Qualifier	Unit	D	Limits
Mercury	167	166		ug/Kg	100	80 - 120

Lab Sample ID: LCSD 580-208600/22-A

Matrix: Solid

Analysis Batch: 208666

Analyte	Spike	LCSD	LCSD	%Rec.			RPD
	Added	Result	Qualifier	Unit	D	Limits	RPD
Mercury	167	166		ug/Kg	100	80 - 120	0 20

Lab Sample ID: LCSSRM 580-208600/23-A ^10

Matrix: Solid

Analysis Batch: 208666

Analyte	Spike	LCSSRM	LCSSRM	%Rec.		
	Added	Result	Qualifier	Unit	D	Limits
Mercury	12900	15100		ug/Kg	117.0	51.2 - 148.1

Lab Sample ID: 580-55916-5 MS

Matrix: Solid

Analysis Batch: 208666

Analyte	Sample	Sample	Spike	MS	MS	%Rec.		
	Result	Qualifier	Added	Result	Qualifier	Unit	D	Limits
Mercury	650	F1	334	760	F1	ug/Kg	⊗ 33	80 - 120

Lab Sample ID: 580-55916-5 MSD

Matrix: Solid

Analysis Batch: 208666

Analyte	Sample	Sample	Spike	MSD	MSD	%Rec.			RPD
	Result	Qualifier	Added	Result	Qualifier	Unit	D	Limits	RPD
Mercury	650	F1	341	852	F1	ug/Kg	⊗ 60	80 - 120	11 20

Lab Sample ID: 580-55916-5 DU

Matrix: Solid

Analysis Batch: 208666

Analyte	Sample	Sample	Spike	DU	DU	%Rec.			RPD
	Result	Qualifier	Added	Result	Qualifier	Unit	D	Limits	RPD
Mercury	650	F1		553		ug/Kg	⊗		16 20

TestAmerica Seattle

## Lab Chronicle

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB6A-S-151215**

**Lab Sample ID: 580-55916-1**

Matrix: Solid

Date Collected: 12/15/15 13:25

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

**Client Sample ID: CB6A-S-151215**

**Lab Sample ID: 580-55916-1**

Matrix: Solid

Date Collected: 12/15/15 13:25

Date Received: 12/16/15 10:15

Percent Solids: 23.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 16:55	CJ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D		10	208823	12/30/15 23:36	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		10	209826	01/20/16 11:05	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209570	01/15/16 06:33	DCV	TAL SEA
Total/NA	Prep	3050B			208186	12/18/15 13:06	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208269	12/19/15 02:50	HJM	TAL SEA
Total/NA	Prep	7471A			208375	12/22/15 12:25	DCC	TAL SEA
Total/NA	Analysis	7471A		1	208508	12/22/15 15:23	FCW	TAL SEA

**Client Sample ID: CB2E-S-151215**

**Lab Sample ID: 580-55916-2**

Matrix: Solid

Date Collected: 12/15/15 14:05

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

**Client Sample ID: CB2E-S-151215**

**Lab Sample ID: 580-55916-2**

Matrix: Solid

Date Collected: 12/15/15 14:05

Date Received: 12/16/15 10:15

Percent Solids: 41.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 17:21	CJ	TAL SEA
Total/NA	Prep	3550B	DL		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL	100	209032	01/04/16 20:21	ERZ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D		10	208823	12/31/15 00:01	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		5	209826	01/20/16 11:22	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209570	01/15/16 06:50	DCV	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA

TestAmerica Seattle

## Lab Chronicle

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB2E-S-151215**

**Date Collected: 12/15/15 14:05**

**Date Received: 12/16/15 10:15**

**Lab Sample ID: 580-55916-2**

**Matrix: Solid**

**Percent Solids: 41.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8082A		5	209755	01/19/16 17:14	DCV	TAL SEA
Total/NA	Prep	3050B			208186	12/18/15 13:06	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208269	12/19/15 03:53	HJM	TAL SEA
Total/NA	Prep	7471A			208375	12/22/15 12:25	DCC	TAL SEA
Total/NA	Analysis	7471A		1	208508	12/22/15 15:25	FCW	TAL SEA

**Client Sample ID: CB4A-S-151215**

**Date Collected: 12/15/15 14:40**

**Date Received: 12/16/15 10:15**

**Lab Sample ID: 580-55916-3**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

**Client Sample ID: CB4A-S-151215**

**Date Collected: 12/15/15 14:40**

**Date Received: 12/16/15 10:15**

**Lab Sample ID: 580-55916-3**

**Matrix: Solid**

**Percent Solids: 44.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 17:48	CJ	TAL SEA
Total/NA	Prep	3550B	DL		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL	100	209032	01/04/16 20:46	ERZ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D		10	208823	12/31/15 00:26	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		10	209826	01/20/16 11:38	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209755	01/19/16 17:31	DCV	TAL SEA
Total/NA	Prep	3050B			208186	12/18/15 13:06	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208269	12/19/15 03:31	HJM	TAL SEA
Total/NA	Prep	7471A			208375	12/22/15 12:25	DCC	TAL SEA
Total/NA	Analysis	7471A		1	208508	12/22/15 15:28	FCW	TAL SEA

**Client Sample ID: CB1G-S-151215**

**Date Collected: 12/15/15 15:00**

**Date Received: 12/16/15 10:15**

**Lab Sample ID: 580-55916-4**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

TestAmerica Seattle

## Lab Chronicle

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB1G-S-151215**

**Lab Sample ID: 580-55916-4**

Matrix: Solid

Percent Solids: 44.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 18:15	CJ	TAL SEA
Total/NA	Prep	3550B	DL		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL	10	209032	01/04/16 21:12	ERZ	TAL SEA
Total/NA	Prep	3550B	DL2		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL2	100	209032	01/04/16 21:37	ERZ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D		10	208823	12/31/15 00:51	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		10	209826	01/20/16 11:55	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209755	01/19/16 17:48	DCV	TAL SEA
Total/NA	Prep	3050B			208186	12/18/15 13:06	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208269	12/19/15 03:35	HJM	TAL SEA
Total/NA	Prep	7471A			208375	12/22/15 12:25	DCC	TAL SEA
Total/NA	Analysis	7471A		1	208508	12/22/15 15:30	FCW	TAL SEA

**Client Sample ID: CB5A-S-151215**

**Lab Sample ID: 580-55916-5**

Matrix: Solid

Date Collected: 12/15/15 15:35

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

**Client Sample ID: CB5A-S-151215**

**Lab Sample ID: 580-55916-5**

Matrix: Solid

Date Collected: 12/15/15 15:35

Date Received: 12/16/15 10:15

Percent Solids: 41.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 18:42	CJ	TAL SEA
Total/NA	Prep	3550B	DL		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL	10	209032	01/04/16 22:02	ERZ	TAL SEA
Total/NA	Prep	3550B	DL2		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL2	100	209032	01/04/16 23:18	ERZ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D		10	208823	12/31/15 01:16	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		5	209826	01/20/16 12:11	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209755	01/19/16 18:06	DCV	TAL SEA
Total/NA	Prep	3050B			208339	12/22/15 07:57	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208546	12/22/15 20:50	FCW	TAL SEA

TestAmerica Seattle

## Lab Chronicle

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB5A-S-151215**

**Lab Sample ID: 580-55916-5**

Matrix: Solid

Percent Solids: 41.5

Date Collected: 12/15/15 15:35

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			208600	12/24/15 08:37	MKN	TAL SEA
Total/NA	Analysis	7471A		1	208666	12/24/15 13:17	FCW	TAL SEA

**Client Sample ID: RB-1-151215**

**Lab Sample ID: 580-55916-6**

Matrix: Water

Date Collected: 12/15/15 15:55

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	208241	12/21/15 16:54	D1R	TAL SEA
Total/NA	Prep	3520C			208145	12/18/15 08:46	HLC	TAL SEA
Total/NA	Analysis	8270D		1	208231	12/20/15 10:47	ERZ	TAL SEA
Total/NA	Prep	3520C	RE		208745	12/29/15 15:01	HLC	TAL SEA
Total/NA	Analysis	8270D	RE	1	208823	12/30/15 23:11	ERB	TAL SEA
Total/NA	Prep	3510C			301686	12/21/15 10:34	FTD	TAL IRV
Total/NA	Analysis	8081A		1	301755	12/22/15 20:14	KS	TAL IRV
Total/NA	Prep	3510C			208302	12/21/15 15:13	RBL	TAL SEA
Total/NA	Analysis	8082A		1	208449	12/23/15 02:01	DCV	TAL SEA
Total Recoverable	Prep	3005A			302224	12/23/15 08:32	ND	TAL IRV
Total Recoverable	Analysis	6020		1	302363	12/23/15 16:23	NH	TAL IRV
Total Recoverable	Prep	3005A			303360	12/31/15 10:10	ND	TAL IRV
Total Recoverable	Analysis	6020		1	303579	12/31/15 18:48	RC	TAL IRV
Total/NA	Prep	7470A			208354	12/22/15 09:22	DCC	TAL SEA
Total/NA	Analysis	7470A		1	208391	12/22/15 12:48	FCW	TAL SEA

**Client Sample ID: CB3CD-S-1581215**

**Lab Sample ID: 580-55916-7**

Matrix: Solid

Date Collected: 12/15/15 16:45

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

**Client Sample ID: CB3CD-S-1581215**

**Lab Sample ID: 580-55916-7**

Matrix: Solid

Date Collected: 12/15/15 16:45

Date Received: 12/16/15 10:15

Percent Solids: 53.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 20:03	CJ	TAL SEA
Total/NA	Prep	3550B	DL		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL	10	209032	01/05/16 00:34	ERZ	TAL SEA
Total/NA	Prep	3550B	DL2		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL2	100	209032	01/05/16 01:00	ERZ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA

TestAmerica Seattle

## Lab Chronicle

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

**Client Sample ID: CB3CD-S-1581215**

**Lab Sample ID: 580-55916-7**

Date Collected: 12/15/15 16:45

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 53.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D		10	208823	12/31/15 02:30	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		5	209826	01/20/16 13:02	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209755	01/19/16 18:58	DCV	TAL SEA
Total/NA	Prep	3050B			208186	12/18/15 13:06	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208269	12/19/15 03:44	HJM	TAL SEA
Total/NA	Prep	7471A			208375	12/22/15 12:25	DCC	TAL SEA
Total/NA	Analysis	7471A		1	208508	12/22/15 15:32	FCW	TAL SEA

**Client Sample ID: TRENCH1-S-151215**

**Lab Sample ID: 580-55916-8**

Date Collected: 12/15/15 17:15

Matrix: Solid

Date Received: 12/16/15 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	208271	12/21/15 10:45	J1J	TAL SEA

**Client Sample ID: TRENCH1-S-151215**

**Lab Sample ID: 580-55916-8**

Date Collected: 12/15/15 17:15

Matrix: Solid

Date Received: 12/16/15 10:15

Percent Solids: 49.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			208712	12/17/15 10:45	IWH	TAL SEA
Total/NA	Analysis	8260C		1	208714	12/29/15 20:31	CJ	TAL SEA
Total/NA	Prep	3550B	DL		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL	10	209032	01/05/16 01:25	ERZ	TAL SEA
Total/NA	Prep	3550B	DL2		208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D	DL2	100	209032	01/05/16 01:50	ERZ	TAL SEA
Total/NA	Prep	3550B			208490	12/23/15 08:49	J1J	TAL SEA
Total/NA	Analysis	8270D		10	208823	12/31/15 02:55	ERB	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8081B		20	209826	01/20/16 13:18	JCP	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		1	209570	01/15/16 08:51	DCV	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		20	209755	01/19/16 19:15	DCV	TAL SEA
Total/NA	Prep	3550B			208163	12/18/15 11:04	J1J	TAL SEA
Total/NA	Analysis	8082A		20	209755	01/19/16 19:15	DCV	TAL SEA
Total/NA	Prep	3050B			208186	12/18/15 13:06	DCC	TAL SEA
Total/NA	Analysis	6020A		10	208269	12/19/15 03:49	HJM	TAL SEA
Total/NA	Prep	7471A			208375	12/22/15 12:25	DCC	TAL SEA
Total/NA	Analysis	7471A		1	208508	12/22/15 15:35	FCW	TAL SEA

**Laboratory References:**

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

TestAmerica Seattle

## Certification Summary

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

### Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C553	02-17-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8081B	3550B	Solid	2,4'-DDD
8081B	3550B	Solid	2,4'-DDE
8081B	3550B	Solid	2,4'-DDT
8082A	3510C	Water	Polychlorinated biphenyls, Total
8082A	3550B	Solid	Polychlorinated biphenyls, Total
8260C		Water	Xylenes, Total
8260C	5035	Solid	Xylenes, Total
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

### Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-16 *
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-16 *
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17 *
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

\* Certification renewal pending - certification considered valid.

## Sample Summary

Client: ERM-West

Project/Site: Univar Portland (NW Yeon)

TestAmerica Job ID: 580-55916-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-55916-1	CB6A-S-151215	Solid	12/15/15 13:25	12/16/15 10:15
580-55916-2	CB2E-S-151215	Solid	12/15/15 14:05	12/16/15 10:15
580-55916-3	CB4A-S-151215	Solid	12/15/15 14:40	12/16/15 10:15
580-55916-4	CB1G-S-151215	Solid	12/15/15 15:00	12/16/15 10:15
580-55916-5	CB5A-S-151215	Solid	12/15/15 15:35	12/16/15 10:15
580-55916-6	RB-1-151215	Water	12/15/15 15:55	12/16/15 10:15
580-55916-7	CB3CD-S-1581215	Solid	12/15/15 16:45	12/16/15 10:15
580-55916-8	TRENCH1-S-151215	Solid	12/15/15 17:15	12/16/15 10:15

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TestAmerica Seattle

## Chain of Custody Record



580-55916 Chain of Custody

<b>Client Information</b>		Sampler: <u>JUSTIN DAUPHINAIS</u> / <u>Trevor</u>	Lab PM: <u>Murphy, Sarah A</u>	580-55916 Chain of Custody									
Client Contact: <u>Cyrus Gorman</u> <u>Brendan Robinson</u>		Phone: <u>503-853-2468</u>	E-Mail: <u>sarah.murphy@testamericainc.com</u>										
Company: ERM-West		Analysis Requested											
Address: 1218 3rd Ave Suite 1412 1001SW 5th AVE		Due Date Requested:											
City: Seattle <u>Portland</u>		TAT Requested (days): <u>STANDARD</u>											
State, Zip: WA, 98101 OR, 97204													
Phone: <u>503-488-5282</u>		PO #: Purchase Order Requested <u>328613</u>											
Email: <u>cyrus.gorman@erm.com</u> <u>brendan.robinson@erm.com</u>		WO #:											
Project Name: Univar Portland (NW Yeon)		Project #: <u>5800002 328613</u>											
Site: <u>UNIVAR PORTLAND</u>		SSOW#:											
Sample Identification													
		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, T=tissue, A=Air)	Field Editor Sample ID	Preservation Code	6020A, 7471A, 81801B, 80807A, 80808A	010228-829600 - (MD) Standard List Volatile Organics	101	101	101	101
		<u>CB6A-S-151215</u>	<u>12/15/15</u>	<u>1325</u>	<u>G</u>	Solid	X	X					
		<u>CB2E-S-151215</u>	<u>12/15/15</u>	<u>1405</u>	<u>G</u>	Solid	X	X					
		<u>CB4A-S-151215</u>	<u>12/15/15</u>	<u>1440</u>	<u>G</u>	Solid	X	X					
		<u>CB1G-S-151215</u>	<u>12/15/15</u>	<u>1500</u>	<u>G</u>	Solid	X	X					
		<u>CB5A-S-151215</u>	<u>12/15/15</u>	<u>1535</u>	<u>G</u>	Solid	X	X					
		<u>RB-1-151215</u>	<u>12/15/15</u>	<u>1555</u>	<u>G</u>	Solid	X	X					
		<u>CB3CD-S-151215</u>	<u>12/15/15</u>	<u>1645</u>	<u>G</u>	Solid	X	X					
		<u>TRENCH1-S-151215</u>	<u>12/15/15</u>	<u>1715</u>	<u>G</u>	Solid	X	X					
Possible Hazard Identification													
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological													
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)													
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months													
Deliverable Requested: I, II, III, IV, Other (specify)													
Special Instructions/QC Requirements:													
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:									
Relinquished by: <u>SN</u>		Date/Time: <u>12/16/15 1015</u>	Company: <u>ERM</u>	Received by: <u>MS</u>	Date/Time: <u>12/16/15 1015</u>	Company: <u>TP</u>							
Relinquished by:		Date/Time:	Company:	Received by:	Date/Time:	Company:							
Relinquished by:		Date/Time:	Company:	Received by:	Date/Time:	Company:							
Custody Seals Intact:		Custody Seal No.: <u>107 08 ARIG C</u>											
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks:											

# Chain of Custody Record



**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM: Murphy, Sarah A		Carrier Tracking No(s):		COC No: 580-34404.1				
Client Contact Shipping/Receiving		Phone:		E-Mail: sarah.murphy@testamericainc.com				Page: Page 1 of 1				
Company: TestAmerica Laboratories, Inc								Job #: 580-55916-1				
Address: 17461 Derian Ave, Suite 100,		Due Date Requested: 1/4/2016		TAT Requested (days):		Analysis Requested		Preservation Codes:				
City: Irvine								A - HCL      M - Hexane B - NaOH      N - None C - Zn Acetate      O - AsNaO2 D - Nitric Acid      P - Na2O4S E - NaHSO4      Q - Na2SO3 F - MeOH      R - Na2S2SO3 G - Amchlor      S - H2SO4 H - Ascorbic Acid      T - TSP Dodecahydrate I - Ice      U - Acetone J - DI Water      V - MCAA K - EDTA      W - ph 4-5 L - EDA      Z - other (specify)				
State, Zip: CA, 92614-5817								Other:				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)		PO #:										
Email:		WO #:										
Project Name: Univar Portland (NW Yeon)		Project #: 58009472										
Site:		SSOW#:										
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab) <small>B/T=Tissue, A=Air</small>	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample Yes or No	Performance Test Yes or No	808-A_LI3510C (MOD) Standard 8081 ALL Pesticide list	8020-0-LI3505A (MOD) Template for building analyte list	Total Number of containers	Special Instructions/Note:	
RB-1-151215 (580-55916-6)		12/15/15	15:55 Pacific	Water	X X							
Possible Hazard Identification		Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For    Months										
Unconfirmed												
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:										
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:		Feb: 6542 7761 4006				
Relinquished by: <i>Sarah Murphy</i>		Date/Time: 12/16/15 1700		Company: TAI		Received by: Vubank		Date/Time: 12/15 9:55			Company: TAI	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:			Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:			Company:	
Custody Seals Intact: △ Yes △ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: ⑥ 1.8/2.7 TR-77								

## Login Sample Receipt Checklist

Client: ERM-West

Job Number: 580-55916-1

**Login Number: 55916**

**List Source: TestAmerica Seattle**

**List Number: 1**

**Creator: Svabik-Seror, Philip M**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: ERM-West

Job Number: 580-55916-1

**Login Number: 55916**

**List Source: TestAmerica Irvine**

**List Number: 2**

**List Creation: 12/17/15 12:49 PM**

**Creator: Ornelas, Olga**

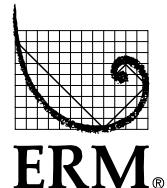
Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Memorandum

Environmental  
Resources  
Management

**To:** Brendan Robinson  
**From:** Elsie King  
**Date:** 9 February 2016  
**Subject:** Data Review of Univar Portland CB Solids Collected  
15 December 2015  
**Project Number:** 0328163.04  
**Data Package:** TestAmerica Data Package 580-55196-1, Revision 2

825 West 8th Avenue  
Anchorage, AK 99501  
(907) 258-4880  
(907) 258-4033 (fax)  
[www.ermalaska.com](http://www.ermalaska.com)



The quality of the data was assessed and any necessary qualifiers were applied following the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, August 2014*, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, August 2014*, and *Quality Assurance Project Plan, 3950 NW Yeon Avenue, Portland, Oregon* (ERM, 2015).

## ***CHAIN-OF-CUSTODY DISCREPANCIES***

The chain-of-custody listed the sample matrix for RB-1-121515 as a solid. The sample was a rinsate blank and the matrix was a water. The laboratory analyzed and reported the rinsate blank correctly.

## ***HOLDING TIME AND PRESERVATION EVALUATION***

The sample shipments were received at the laboratory within the method prescribed temperature preservation requirements. None of the data were qualified based on temperature preservation exceedances.

The samples were prepared and analyzed within the method prescribed time period from the date of collection with a few exceptions. The rinsate blank sample was re-extracted for semivolatile organic compounds (SVOC) analysis seven days outside the seven day holding times due to low laboratory control standard recoveries. The associated data are qualified as estimated nondetected (UJ) and presented in Table 1.

### **BLANK EVALUATION**

The method blank and rinsate blank sample results were nondetected for each of the target analytes, with limited exceptions. Methylene chloride, diethyl phthalate, butyl benzyl phthalate, 4,4-DDD and 4,4'-DDE were detected in method blanks at concentrations greater than the method detection limit, but below the reporting limit. Benzene, toluene, m,p-xylenes, diethyl phthalate and lead were detected in the equipment rinsate blank at concentrations greater than the method detection limit. Associated sample data detected below the reporting limit were qualified as non-detect (U) at the reporting limit. The data qualified as non-detect (U) are presented in Table 2.

### **CONTINUING CALIBRATION VERIFICATION (CCV) EVALUATION**

The continuing calibration verification (CCV) recoveries were within the laboratory's limits of acceptance, with limited exceptions. The CCV associated with samples analyzed in VOC batch 208714 had percent recoveries for ethylbenzene and o-xylene below the lower control limit . Therefore, associated samples were qualified as estimated (J-/UJ) to indicate low bias. A CCV percent recovery was greater than the upper control limit for di-n-octyl phthalate. However, associated sample results for di-n-octyl phthalate were non-detect; no associated sample data were qualified. The closing continuing calibration verification (CCV) standard associated with 8081A batch 580-209826 failed to meet acceptance limits. The associated samples were re-analyzed following a successful CCV and produced similar results, indicating that the sample matrix is adversely affecting the instrument and causing the failures. ERM qualified the affected pesticide results as estimated (J/UJ). In 8082A analytical batch 580-209755 the closing CCV for PCB 1268 failed criteria. Matrix carry over from the previous samples in the bracket is suspected to be the cause. The opening CCV for PCB 1268 in the bracket passed. The samples were not reanalyzed for PCBs due to lack of sample volume and the data has been reported. Qualifiers were not added to PCB results for the closing CCV recoveries. The CCVs that did not meet control limits and associated samples are presented in Table 3.

### ***BLANK SPIKE EVALUATION***

The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recoveries were within the laboratory's limits of acceptance, with limited exceptions. The LCSD percent recoveries and the relative percent difference (RPD) for several VOCs were outside the control limits. Since the associated LCS percent recoveries were within the control limits, associated VOC sample results were not qualified. The percent recoveries of several SVOC were outside the laboratory's lower control limits. The associated SVOC results in the sample RB-1-151215 were qualified as estimated nondetected (UJ). The sample was re-extracted with acceptable LCS/LCSD recoveries and RPD, however the holding time was exceeded. The results are reported from the initial analysis. The LCS/LCSD percent recoveries for endrin aldehyde were outside the laboratory's lower control limit. The results for endrin aldehyde in all soil samples were qualified as estimated with a low bias (J-/UJ). The outliers are presented in Table 4.

### ***MATRIX SPIKE EVALUATION***

The matrix spike (MS)/matrix spike duplicate (MSD) recoveries were within the laboratory's limits of acceptance with limited exceptions. There were multiple percent recoveries for SVOC, pesticides, PCBs and metals that were outside of the MS/MSD control limits. In addition, the RPD in recovered concentrations were also greater than the acceptable limits. Qualifications were not required when the initial sample concentrations were greater than 4 times the spike amount. Additionally, no sample data required qualification if only the MS or MSD were outside the control limits. Several results associated with low MS/MSD recoveries are qualified as estimated (J-/UJ). Detected results associated with high MS/MSD recoveries are qualified as estimated (J+). The MS/MSD outliers and qualified data are presented in Table 5.

### ***LAB DUPLICATE EVALUATION***

Samples were analyzed by the laboratory in duplicate for metals. RPDs between the primary sample and the duplicate were less than 20 percent, indicating acceptable precision, with limited exceptions. The RPD for chromium, nickel and zinc were greater than 20 percent for sample CB6A-

A-151215. The results have been qualified as estimated (J). The qualified sample results are presented in Table 6.

### **SURROGATE SPIKE EVALUATION**

The surrogate recoveries were within acceptable limits with a few exceptions. Several surrogate percent recoveries were outside control limits. Several results associated with low MS/MSD recoveries are qualified as estimated (J-/UJ). Detected results associated with high surrogate recoveries are qualified as estimated (J+). Non-detect sample results were not qualified for high surrogate recoveries. The surrogate outliers are presented in Table 7.

### **CHROMATOGRAM EVALUATION**

The laboratory noted that the sample peaks for technical chlordane did not resemble the laboratory standard in two samples. In addition, the laboratory noted that the soil sample chromatograms indicated matrix interference that may bias the results. ERM qualified the affected pesticide results as estimated (J/UJ) as shown in Table 8.

### **OVERALL ASSESSMENT**

No data required rejection. All of the data, including qualified data, can be used for decision-making purposes; however, the limitations indicated by the applied qualifiers should be considered when using the data. The quality of the data generated during this investigation is acceptable for the preparation of technically defensible documents.

**Table 1**  
*Samples with Exceeded Holding Times*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Sample ID	Method	Extraction Holding Time	# of Days Exceeded	Analysis Holding Time	# of Days Exceeded	ERM Qualifier
580-55916-1	RB-1-151215 RE	8270D	7 days	7 days	40 days	--	J/UJ

Lab reports reviewed: 580-55916-1

**Key:**

UJ= Estimated nondetected

RE = Reanalysis

**Table 2**  
**Blank and Associated Suspect Sample Detections**  
**NW Yeon Soil Samples, December 2015**  
**Univar**  
**Portland, Oregon**

Lab Package	Blank ID	Associated Samples	Detected Compound	Reported Result	Report Limit	Units	ERM Qualifier
580-55916-1	MB 580-208712/1-A	--	Methylene Chloride	3.58	15	µg/kg	--
580-55916-1	MB 580-208712/1-A	CB1G-S-151215	Methylene Chloride	0.41	25.0	µg/kg	< 0.41 U
580-55916-1	RB-1-151215	--	Benzene	0.030	0.20	µg/L	--
580-55916-1	RB-1-151215	--	Toluene	0.11	0.20	µg/L	--
580-55916-1	RB-1-151215	--	m-Xylene & p-Xylene	0.050	0.50	µg/L	--
580-55916-1	RB-1-151215	CB2E-S-151215	m-Xylene & p-Xylene	0.64	4.5	µg/kg	< 0.64 U
580-55916-1	RB-1-151215	CB1G-S-151215	Toluene	1.2	3.3	µg/kg	< 1.2 U
580-55916-1	RB-1-151215	CB3CD-S-1581215	Toluene	2.9	3.6	µg/kg	< 2.9 U
580-55916-1	RB-1-151215	CB3CD-S-1581215	m-Xylene & p-Xylene	2.3	3.6	µg/kg	< 2.3 U
580-55916-1	RB-1-151215	TRENCH1-S-151215	Toluene	0.62	4.0	µg/kg	< 0.62 U
580-55916-1	RB-1-151215	TRENCH1-S-151215	m-Xylene & p-Xylene	0.42	4.0	µg/kg	< 0.42 U
580-55916-1	MB 580-208145/1-A	--	Diethyl phthalate	0.197	0.40	µg/L	--
580-55916-1	RB-1-151215	--	Diethyl phthalate	0.17	0.38	µg/L	--
580-55916-1	MB 580-208490/1-A	--	Butyl benzyl phthalate	8.09	20	µg/kg	--
580-55916-1	MB 580-208490/1-A	--	Diethyl phthalate	3.70	20	µg/kg	--
580-55916-1	MB 580-208490/1-A	CB6A-S-151215	Diethyl phthalate	82	850	µg/kg	< 82 U
580-55916-1	MB 580-208490/1-A	CB2E-S-151215	Diethyl phthalate	39	470	µg/kg	< 39 U
580-55916-1	MB 580-208490/1-A	CB4A-S-151215	Butyl benzyl phthalate	370	450	µg/kg	< 370 U
580-55916-1	MB 580-208490/1-A	CB4A-S-151215	Diethyl phthalate	51	450	µg/kg	< 51 U
580-55916-1	MB 580-208490/1-A	CB1G-S-151215	Diethyl phthalate	35	450	µg/kg	< 35 U
580-55916-1	MB 580-208490/1-A	CB5A-S-151215	Diethyl phthalate	74	480	µg/kg	< 74 U
580-55916-1	MB 580-208490/1-A	CB3CD-S-1581215	Diethyl phthalate	30	360	µg/kg	< 30 U
580-55916-1	MB 580-208163/1-A	--	4,4'-DDD	0.0298	0.20	µg/kg	--
580-55916-1	MB 580-208163/1-A	--	4,4'-DDE	0.0366	0.20	µg/kg	--
580-55916-1	MB 580-208163/1-A	CB6A-S-151215	4,4'-DDD	0.54	8.6	µg/kg	< 0.54 U
580-55916-1	MB 580-208163/1-A	CB6A-S-151215	4,4'-DDE	3.4	8.6	µg/kg	< 3.4 U
580-55916-1	MB 580-208163/1-A	CB4A-S-151215	4,4'-DDD	1.5	4.4	µg/kg	< 1.5 U
580-55916-1	MB 580-208163/1-A	CB4A-S-151215	4,4'-DDE	1.3	4.4	µg/kg	< 1.3 U
580-55916-1	MB 580-208163/1-A	CB1G-S-151215	4,4'-DDD	3.6	4.5	µg/kg	< 3.6 U
580-55916-1	MB 580-208163/1-A	CB1G-S-151215	4,4'-DDE	2.3	4.5	µg/kg	< 2.3 U
580-55916-1	RB-1-151215	--	Lead	0.051	0.10	µg/L	--

Lab reports reviewed: 580-55916-1

**Key:**

µg/kg = Micrograms per kilogram

µg/L = Micrograms per liter U=

Non-detected

**Table 3**  
*CCV Recoveries Outside of Acceptable Limits*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Batch/ ID	Associated Sample	Compound	Bias	Result	Units	ERM Qualifier
<b>CCV</b>							
580-55916-1	580-208714	See below	Ethylbenzene	low bias	--	--	--
580-55916-1	580-208714	See below	o-Xylene	low bias	--	--	--
580-55916-1	580-208714	CB6A-S-151215	Ethylbenzene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB6A-S-151215	o-Xylene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB2E-S-151215	Ethylbenzene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB2E-S-151215	o-Xylene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB4A-S-151215	Ethylbenzene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB4A-S-151215	o-Xylene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB1G-S-151215	Ethylbenzene	--	0.97	µg/kg	J-
580-55916-1	580-208714	CB1G-S-151215	o-Xylene	--	2.4	µg/kg	J-
580-55916-1	580-208714	CB5A-S-151215	Ethylbenzene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB5A-S-151215	o-Xylene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB3CD-S-151215	Ethylbenzene	--	ND	µg/kg	UJ
580-55916-1	580-208714	CB3CD-S-151215	o-Xylene	--	1.4	µg/kg	J-
580-55916-1	580-208714	TRENCH1-S-151215	Ethylbenzene	--	ND	µg/kg	UJ
580-55916-1	580-208714	TRENCH1-S-151215	o-Xylene	--	ND	µg/kg	UJ
580-55916-1	580-208823	--	Di-n-octyl phthalate.	high bias	--	--	NA
580-55916-1	440-301755	--	4,4'-DDD	high bias	--	--	NA
580-55916-1	580-209826	--	All Pesticides	Unknown	--	--	J/UJ
580-55916-1	580-209826	CB6A-S-151215	All Pesticides	--	--	--	J/UJ
580-55916-1	580-209826	CB2E-S-151215	All Pesticides	--	--	--	J/UJ
580-55916-1	580-209826	CB4A-S-151215	All Pesticides	--	--	--	J/UJ
580-55916-1	580-209826	CB1G-S-151215	All Pesticides	--	--	--	J/UJ
580-55916-1	580-209826	CB5A-S-151215	All Pesticides	--	--	--	J/UJ
580-55916-1	580-209826	CB3CD-S-151215	All Pesticides	--	--	--	J/UJ
580-55916-1	580-209826	TRENCH1-S-151215	All Pesticides	--	--	--	J/UJ

**Table 3**  
*CCV Recoveries Outside of Acceptable Limits*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Batch/ ID	Associated Sample	Compound	Bias	Result	Units	ERM Qualifier
580-55916-1	580-209755	--	PCB 1268	Unknown	--	--	NA

Lab reports reviewed: 580-55916-1

Key:

µg/kg= Micrograms per kilogram

CCV = Continuing Calibration Verification

J = Estimated detected result

UJ= Estimated nondetected

ND = Nondetected

**Table 4**  
**Laboratory Control Sample Recoveries Outside of Acceptable Limits**  
**NW Yeon Soil Samples, December 2015**  
**Univar**  
**Portland, Oregon**

Lab Package	Spike Sample ID	Associated Sample	Compound	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
LCS/LCSD										
580-55916-1	580-208712/2-A	NA	1,1,1-Trichloroethane	91/73	63 - 135	22	20	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	Toluene	83/70	75 - 126	17	19	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	o-Xylene	82/70	77 - 127	16	22	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	Styrene	84/72	79 - 127	15	21	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	trans-1,2-Dichloroethene	89/72	76 - 131	20	18	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	Trichloroethene	103/86	83 - 124	18	17	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	Ethylbenzene	80/67	78 - 126	18	23	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	Chloroform	98/82	78 - 125	18	17	--	µg/kg	NA
580-55916-1	580-208712/2-A	NA	m-Xylene & p-Xylene	83/70	78 - 126	17	23	--	µg/kg	NA
580-55916-1	580-208145/2-A	NA	Acenaphthene	71/88	63 - 125	21	20	--	µg/L	NA
580-55916-1	580-208145/2-A	See below	Acenaphthylene	57/59	62 - 125	3	20	--	µg/L	--
580-55916-1	580-208145/2-A	See below	Anthracene	36/42	50 - 125	15	20	--	µg/L	--
580-55916-1	580-208145/2-A	See below	Benzo[a]pyrene	33/35	45 - 125	5	20	--	µg/L	--
580-55916-1	580-208145/2-A	NA	Butyl benzyl phthalate	96/119	60 - 67	22	20	--	µg/L	NA
580-55916-1	580-208145/2-A	RB-1-151215	Acenaphthylene	--	--	--	--	ND	µg/L	UJ
580-55916-1	580-208145/2-A	RB-1-151215	Anthracene	--	--	--	--	ND	µg/L	UJ
580-55916-1	580-208145/2-A	RB-1-151215	Benzo[a]pyrene	--	--	--	--	ND	µg/L	UJ
580-55916-1	580-208163/2-B	See below	Endrin aldehyde	33/32	45 -130	2	21	ND	µg/kg	UJ
580-55916-1	580-208163/2-B	CB6A-S-151215	Endrin aldehyde	--	--	--	--	5.1	µg/kg	J-
580-55916-1	580-208163/2-B	CB2E-S-151215	Endrin aldehyde	--	--	--	--	ND	µg/kg	UJ
580-55916-1	580-208163/2-B	CB4A-S-151215	Endrin aldehyde	--	--	--	--	1.5	µg/kg	J-
580-55916-1	580-208163/2-B	CB1G-S-151215	Endrin aldehyde	--	--	--	--	1.1	µg/kg	J-
580-55916-1	580-208163/2-B	CB5A-S-151215	Endrin aldehyde	--	--	--	--	42	µg/kg	J-
580-55916-1	580-208163/2-B	CB3CD-S-151215	Endrin aldehyde	--	--	--	--	14	µg/kg	J-
580-55916-1	580-208163/2-B	TRENCH1-S-151215	Endrin aldehyde	--	--	--	--	3.6	µg/kg	J-

**Table 4**  
*Laboratory Control Sample Recoveries Outside of Acceptable Limits*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Spike Sample ID	Associated Sample	Compound	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier

Lab reports reviewed: 580-55916-1

Key:

µg/L = Micrograms per liter

LCS = Laboratory control sample

RPD = Relative percent difference

µg/kg= Micrograms per kilogram

ND = Nondetected

J = Estimated detected result

UJ= Estimated nondetected

- = Biased low

**Table 5**  
**Matrix Spike Recoveries Outside of Acceptable Limits**  
**NW Yeon Soil Samples, December 2015**  
**Univar**  
**Portland, Oregon**

Lab Package	Spike Sample ID	Associated Sample	Compound	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
MS/MSD										
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Acenaphthene	108/76	68-116	29	27	18	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Anthracene	112/76	73-116	30	27	47	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Benzo[a]pyrene	87/158	72-117	30	30	260	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Benzo[g,h,i]perylene	164/182	55-139	13	28	ND	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Benzo[k]fluoranthene	-1/-12	63-119	4	31	440	µg/kg	J-
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Butyl benzyl phthalate	275/230	69-142	6	60	920	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Dibenz(a,h)anthracene	52/58	56-134	49	30	ND	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Diethyl phthalate	101/66	73-116	28	26	74	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Dimethyl phthalate	97/55	78-117	11	60	650	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Di-n-butyl phthalate	42/19	66-140	10	60	430	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Fluoranthene	142/133	73-125	1	36	700	µg/kg	J+
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Indeno[1,2,3-cd]pyrene	116/80	56-127	34	29	ND	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x10)	Di-n-octyl phthalate	NC	65-141	NC	31	750	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215 (x100)	Bis(2-ethylhexyl) phthalate	NC	62-144	136	60	16,000	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	alpha-Chlordane	121/173	52-137	37	17	0.53	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	4,4'-DDE	179/81	50-138	54	17	4.9	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	Endosulfan, beta	45/50	58-144	9	19	1.7	µg/kg	J-
580-55916-1	580-55916-5	CB5A-S-151215	Endrin	81/57	51-143	22	18	3.5	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	Endrin aldehyde	-340/-318	45-130	23	21	42	µg/kg	J-
580-55916-1	580-55916-5	CB5A-S-151215	Endrin ketone	20/74	53-139	29	17	15	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	Methoxychlor	98/57	56-137	33	17	4.4	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	PCB-1260	84/133	60-130	51	20	ND	µg/kg	NA
580-55916-1	580-55916-1	CB6A-S-151215	Chromium	0.2/14	80-120	9	20	92,000	µg/kg	J-
580-55916-1	580-55916-1	CB6A-S-151215	Copper	112/136	80-120	12	20	62,000	µg/kg	NA
580-55916-1	580-55916-1	CB6A-S-151215	Manganese	124/163	80-120	13	20	270,000	µg/kg	J+

**Table 5**  
*Matrix Spike Recoveries Outside of Acceptable Limits*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Spike Sample ID	Associated Sample	Compound	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
580-55916-1	580-55916-1	CB6A-S-151215	Zinc	101/121	80-120	8	20	890,000	µg/kg	NA
580-55916-1	--	CB2E-S-151215	Chromium	--	--	--	--	75,000	µg/kg	J-
580-55916-1	--	CB2E-S-151215	Manganese	--	--	--	--	520,000	µg/kg	J+
580-55916-1	--	CB4A-S-151215	Chromium	--	--	--	--	86,000	µg/kg	J-
580-55916-1	--	CB4A-S-151215	Manganese	--	--	--	--	580,000	µg/kg	J+
580-55916-1	--	CB1G-S-151215	Chromium	--	--	--	--	200,000	µg/kg	J-
580-55916-1	--	CB1G-S-151215	Manganese	--	--	--	--	450,000	µg/kg	J+
580-55916-1	--	CB3CD-S-151215	Chromium	--	--	--	--	70,000	µg/kg	J-
580-55916-1	--	CB3CD-S-151215	Manganese	--	--	--	--	340,000	µg/kg	J+
580-55916-1	--	TRENCH1-S-151215	Chromium	--	--	--	--	270,000	µg/kg	J-
580-55916-1	--	TRENCH1-S-151215	Manganese	--	--	--	--	520,000	µg/kg	J+
580-55916-1	580-55916-5	CB5A-S-151215	Arsenic	98/100	80-120	27	20	3,200	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	Chromium	129/156	80-120	24	20	44,000	µg/kg	J+
580-55916-1	580-55916-5	CB5A-S-151215	Copper	152/132	80-120	5	20	76,000	µg/kg	J+
580-55916-1	580-55916-5	CB5A-S-151215	Manganese	132/169	80-120	14	20	360,000	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	Nickel	109/118	80-120	26	20	29,000	µg/kg	NA
580-55916-1	580-55916-5	CB5A-S-151215	Zinc	162/118	80-120	2	20	1,000,000	µg/kg	NA
580-55916-1	580-55916-1	CB5A-S-151215	Mercury	33/60	80-120	11	20	650	µg/kg	J-
580-55916-1	580-55916-1	CB6A-S-151215	Mercury	--	--	--	--	74	µg/kg	J-
580-55916-1	580-55916-1	CB2E-S-151215	Mercury	--	--	--	--	19	µg/kg	J-
580-55916-1	580-55916-1	CB4A-S-151215	Mercury	--	--	--	--	310	µg/kg	J-
580-55916-1	580-55916-1	CB1G-S-151215	Mercury	--	--	--	--	140	µg/kg	J-
580-55916-1	580-55916-1	CB3CD-S-151215	Mercury	--	--	--	--	79	µg/kg	J-
580-55916-1	580-55916-1	TRENCH1-S-151215	Mercury	--	--	--	--	130	µg/kg	J-

Lab reports reviewed: 580-55916-1

**Table 5**  
*Matrix Spike Recoveries Outside of Acceptable Limits*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Spike Sample ID	Associated Sample	Compound	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
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**Key:**

NA= Not applicable

ND = Nondetected

RPD = Relative percent difference

MS/MSD= Matrix spike/matrix spike duplicate

µg/kg= Micrograms per kilogram

UJ= Estimated nondetected

J = Estimated detected result

- = Biased low

+ = Biased high

**Table 6**  
**Lab Duplicate Results and Calculated Relative Percent Differences**  
**NW Yeon Soil Samples, December 2015**  
**Univar**  
**Portland, Oregon**

<b>Lab Package</b>	<b>Sample ID</b>	<b>Compound</b>	<b>Concentration</b>		<b>MRL</b>	<b>Units</b>	<b>RPD</b>	<b>ERM Qualifier</b>
			<b>Sample</b>	<b>Duplicate</b>				
580-55916-1	CB6A-S-151215	Chromium	92,000	20,300	2,200	µg/kg	127	J
580-55916-1	CB6A-S-151215	Nickel	48,000	14,700	2,200	µg/kg	106	J
580-55916-1	CB6A-S-151215	Zinc	890,000	685,000	22,000	µg/kg	26	J

Lab reports reviewed: 580-55916-1

**Key:**

RPD = Relative percent difference

µg/kg= Micrograms per kilogram

MRL = Method reporting Limit

J = Estimated detected result

**Table 7**  
*Surrogate Spike Recoveries Outside of Acceptable Limits*  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Sample ID	Method	Surrogate	Compound	Recovery (%)	Limit (%)	Result	Units	ERM Qualifier
580-55916-1	CB5A-S-151215 (x10)	8270D SIM	Terphenyl-d14	Di-n-octyl phthalate	175	42-151	--	--	NA
580-55916-1	CB6A-S-151215	8081B	Decachlorobiphenyl	Pesticides	55	60-128	--	µg/kg	J-/UJ
580-55916-1	CB2E-S-151215	8081B	Decachlorobiphenyl	Pesticides	641	60-128	--	µg/kg	J+
580-55916-1	CB4A-S-151215	8081B	Decachlorobiphenyl	Pesticides	139	60-128	--	µg/kg	J+
580-55916-1	CB1G-S-151215	8081B	Decachlorobiphenyl	Pesticides	47	60-128	--	µg/kg	J-/UJ
580-55916-1	CB5A-S-151215	8081B	Decachlorobiphenyl	Pesticides	513	60-128	--	µg/kg	J+
580-55916-1	CB3CD-S-151215	8081B	Decachlorobiphenyl	Pesticides	231	60-128	--	µg/kg	J+
580-55916-1	TRENCH1-S-151215	8081B	Decachlorobiphenyl	Pesticides	395	60-128	--	µg/kg	J+
580-55916-1	CB2E-S-151215 (x1)	8082A	Decachlorobiphenyl	PCBs	144	50-140	--	--	NA
580-55916-1	CB2E-S-151215 (x5)	8082A	Decachlorobiphenyl	PCB 1268	153	50-140	350	µg/kg	J+
580-55916-1	TRENCH1-S-151215 (x1)	8082A	Decachlorobiphenyl	PCBs	303	50-140	--	--	NA
580-55916-1	TRENCH1-S-151215 (x20)	8082A	Decachlorobiphenyl	PCB 1268	320	50-140	1200	µg/kg	J+

Lab reports reviewed: 580-55916-1

**Key:**

µg/kg = Micrograms per kilogram

J = Estimated value

UJ = Estimated nondetected

PCB = Polychlorinated Biphenyls

- = Biased low

+ = Biased high

**Table 8**  
**Suspect Results**  
*NW Yeon Soil Samples, December 2015*  
*Univar*  
*Portland, Oregon*

Lab Package	Sample ID	Compound	Result	Units	ERM Qualifier	Laboratory Notes
580-55916-1	CB2E-S-151215 (x1)	Chlordane (technical)	120	µg/kg	J	Chromatogram peak does not match standard
580-55916-1	TRENCH1-S-151215	Chlordane (technical)	110	µg/kg	J	Chromatogram peak does not match standard
580-55916-1	CB6A-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted
580-55916-1	CB2E-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted
580-55916-1	CB4A-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted
580-55916-1	CB1G-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted
580-55916-1	CB5A-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted
580-55916-1	CB3CD-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted
580-55916-1	TRENCH1-S-151215	Pesticides	--	µg/kg	J/UJ	Chromatogram interference noted

Lab reports reviewed: 580-55916-1

**Key:**

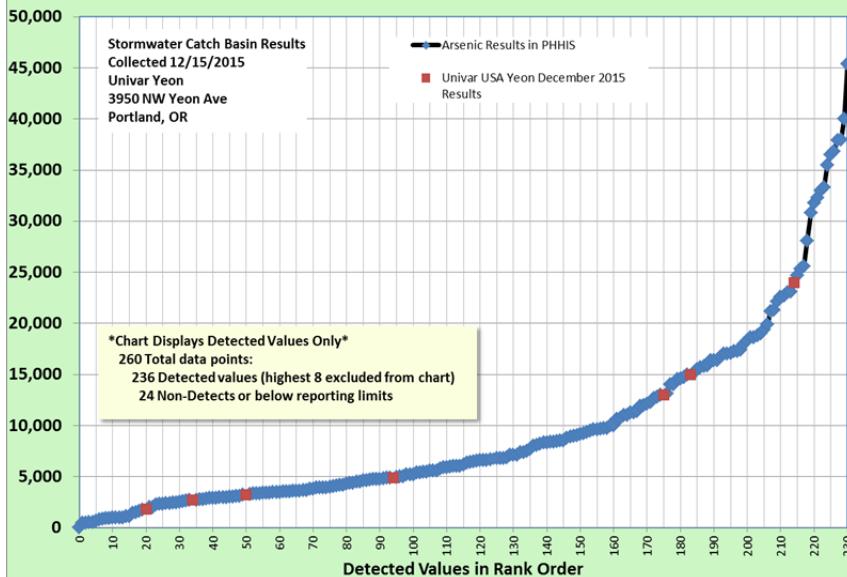
µg/kg= Micrograms per kilogram

J = Estimated value

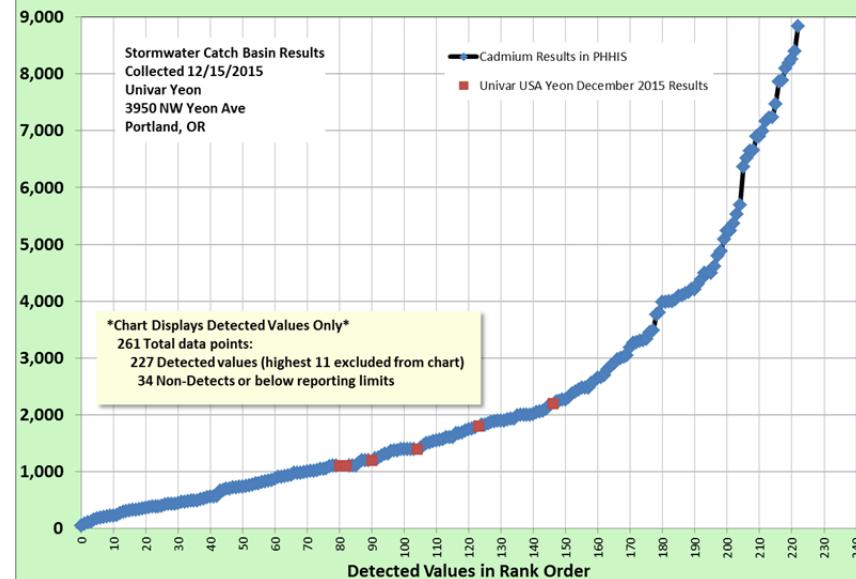
UJ= Estimated nondetected

*Appendix D*  
*ODEQ Portland Harbor*  
*Industrial Stormwater Charts*

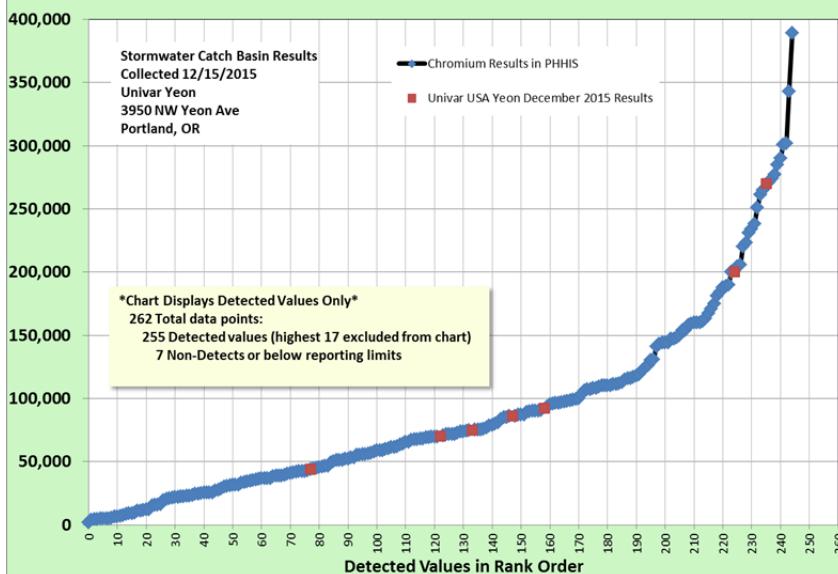
## Arsenic (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



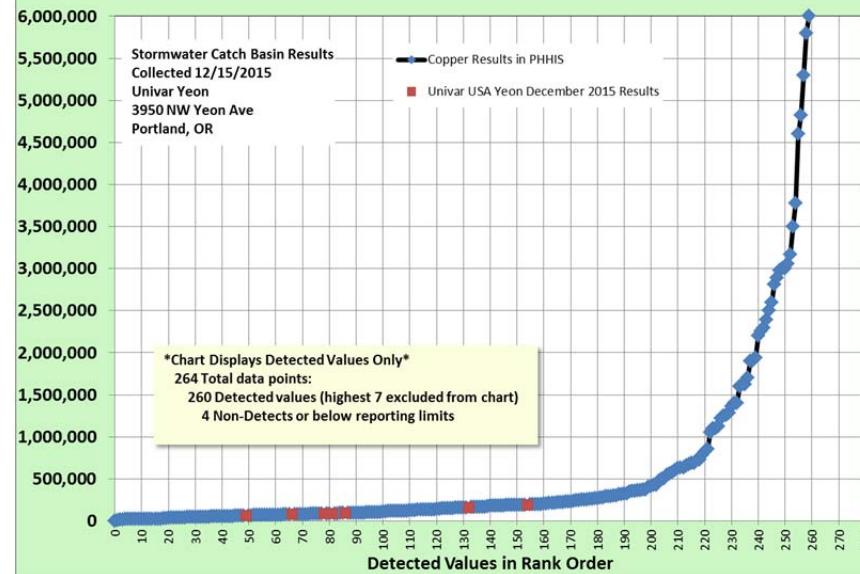
## Cadmium (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



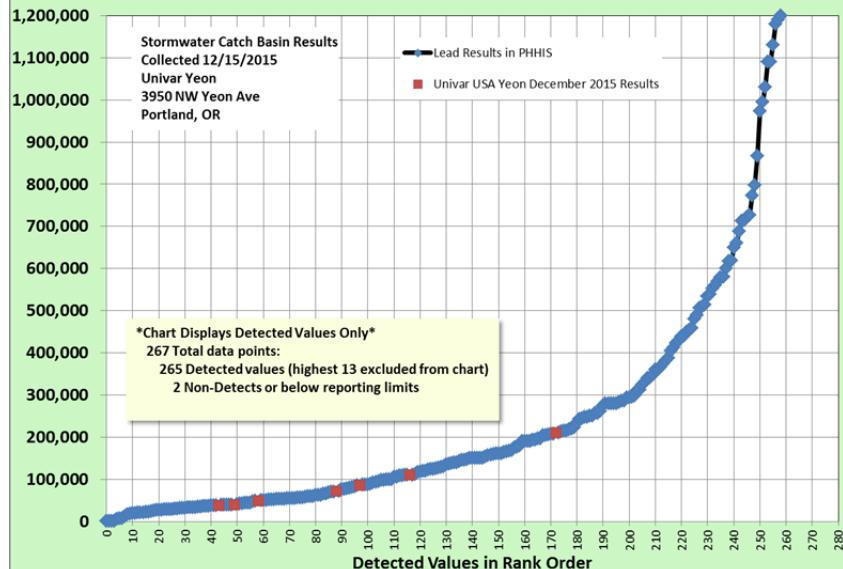
## Chromium (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



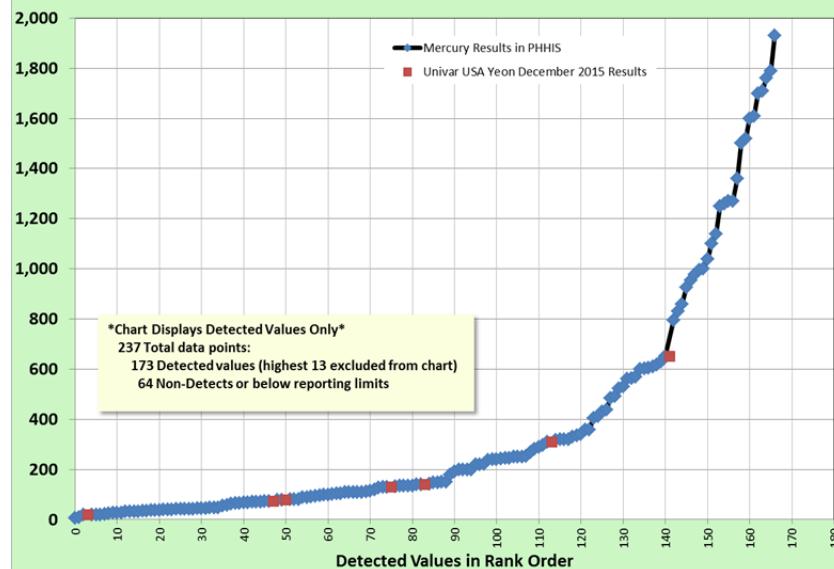
## Copper (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



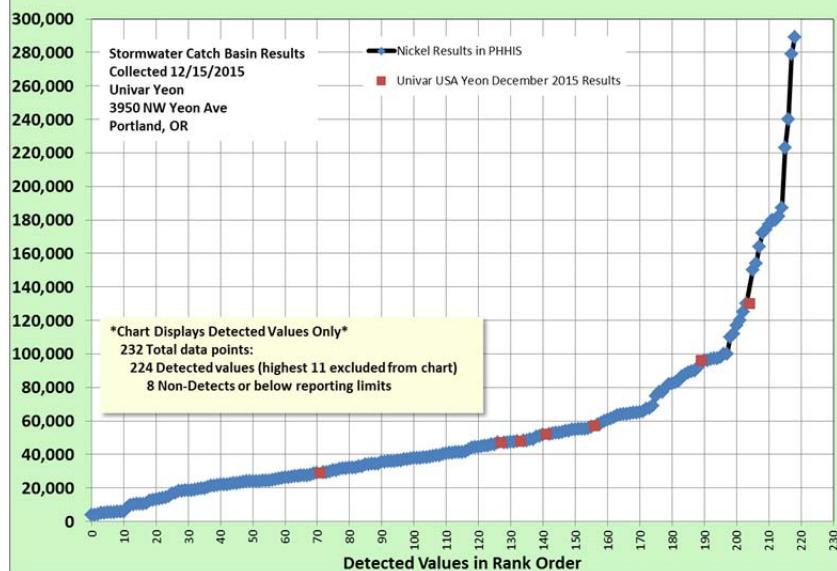
## Lead (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



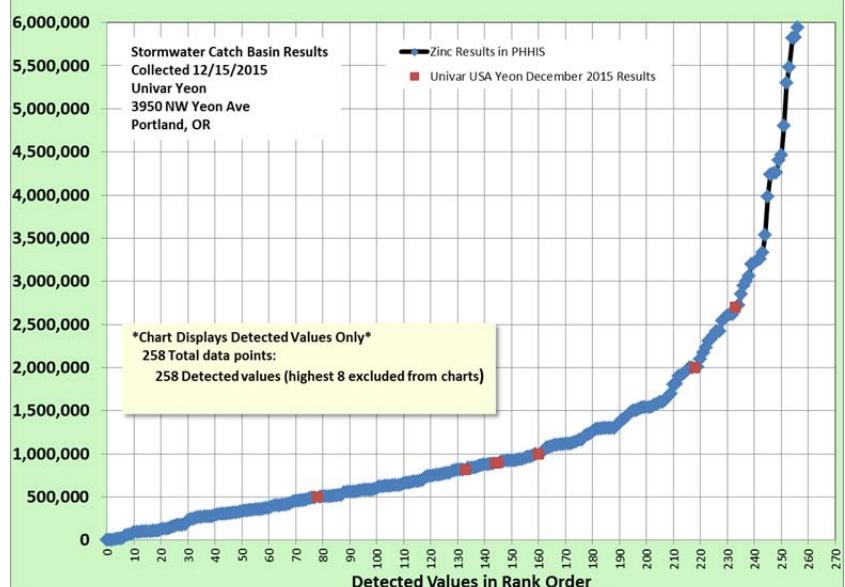
## Mercury (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



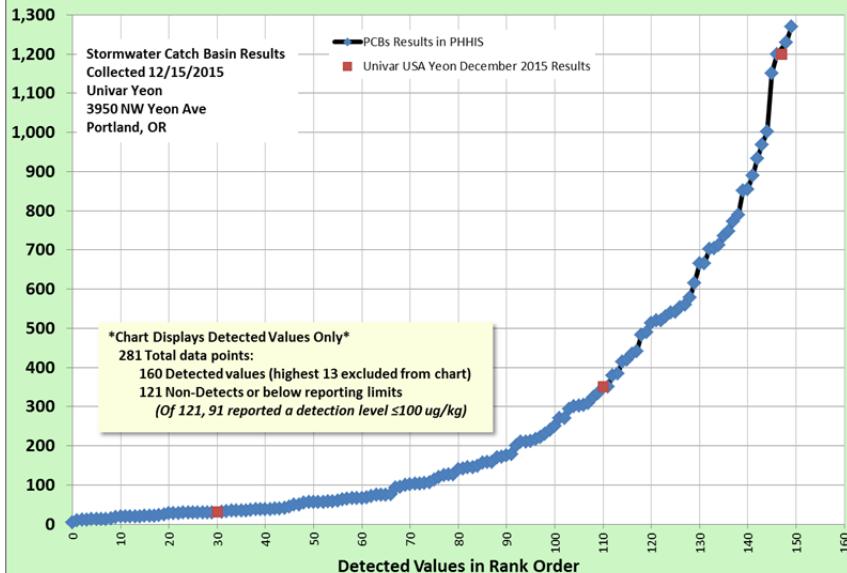
## Nickel (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



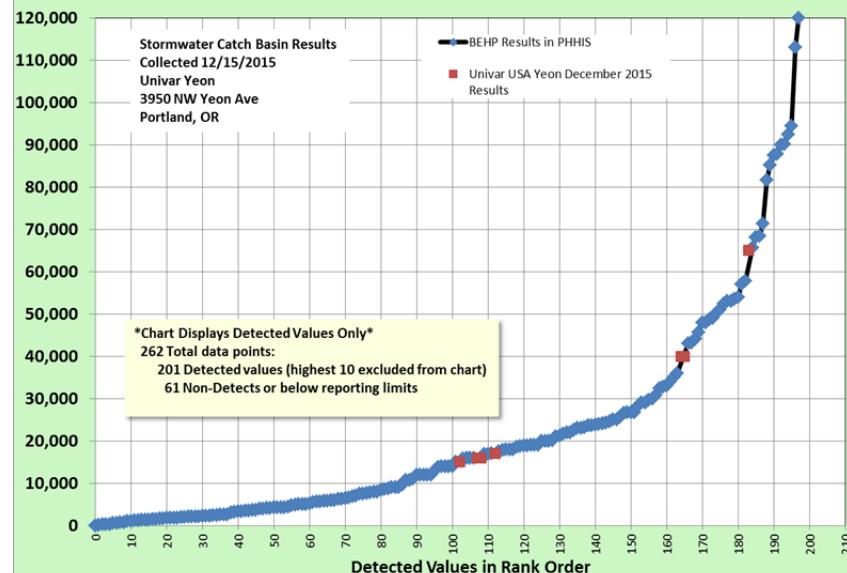
## Zinc (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



## Total PCBs (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



## Bis(2-Ethylhexyl)phthalate in Stormwater Solids at Portland Harbor Heavy Industrial Sites



## Total PAHs (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites

